Max Air

Installation Guide

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Chapter 1: Max Air Overview

This chapter explains the basic elements of any digital audio mixing system and introduces the components of Max Air. It concludes with a section explaining how to estimate your system's requirements.

Chapter 2: *Interconnecting System Components* illustrates how to connect the components, where to locate them, and lists technical information about the components.

Chapter 3: *Max Air Components* presents relevant details about each component's connectors and cables.

Introduction to Max Air

The Max Air Console

The Max Air console must contain a CM404 center section module and can have up to three fully loaded CM416 16-channel Modules, each providing 16 physical faders. The system can have up to 48 faders, not including the eight faders in the CM404 master section. The 416HL and 416HR, which are half-loaded (left or right) 8-fader modules, can be used to expand your system.

The following sections discuss important concepts necessary to specify a console layout.

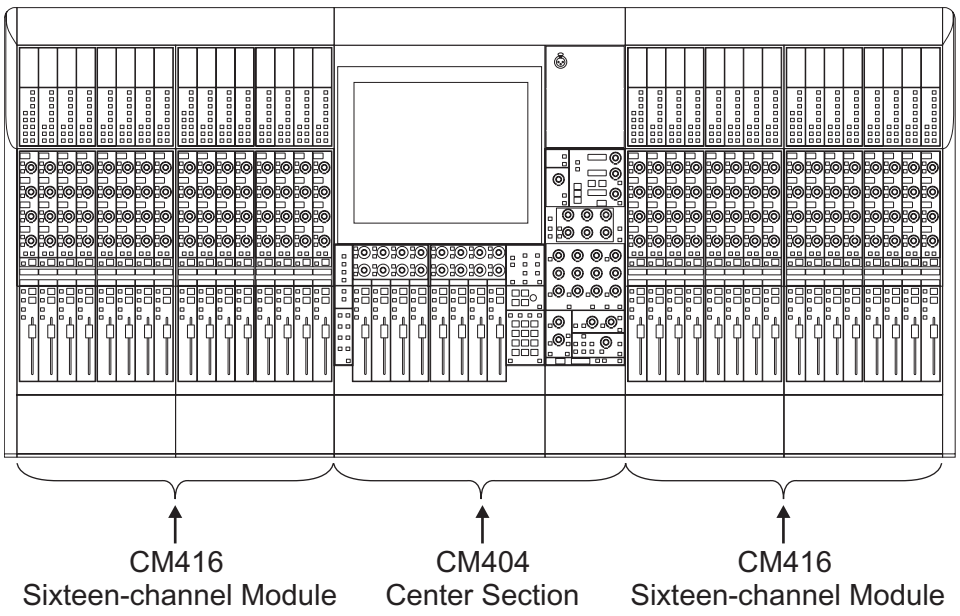


Figure 1-1 Typical Console Layout

Channels

Max Air has 96 channels. Mono channels may be grouped as stereo or any format up to 7.1, which means that one fader may use one to eight logical channels.

Strips

Each fully loaded CM416 16-channel Module contains 16 physical faders or strips. Each fader can control two inputs using a **Swap** button that switches between the Swap and Main channels.

Layouts

Channels are assigned to strips by using *Layouts*. Numerous Layouts can be easily stored and recalled to remap the console surface. To understand Layouts, consider the following examples:

- A console fitted with one CM416 has 16 physical faders that can control up to 32 channels (Swap and Main per strip). One Layout can assign 32 stereo inputs to the faders for a total of 64 logical channels.
- The first 32-channels can be assigned and left connected to the mix buses while a second Layout is recalled. If none of the channels between the Layouts are the same, there are now 64 logical channels feeding the mix buses at the same time, although they cannot be controlled simultaneously from the console surface.

Layouts may also be used to place the inputs most often used on the top fader layer, or inputs that should be grouped together (i.e., microphones or VTRs).

Digital Signal Processing

The DF64 Digital Frame is a rack-mounted unit that performs all Max Air audio processing: dynamics and EQ, mix buses, record buses, aux sends, and monitor buses. Max Air uses a single *Mixer Model* (96 Channels, 24 Groups/Clean Feeds, 12 Aux Sends, 24 Mix Buses and 28 External Inputs) that utilizes one DF64.

Analog and Digital I/O

All audio signals are converted to and from the MADI format through analog and digital converters. Up to four input and three output MADI devices are connected to the MADI card in the DF64. A system can include one SH612 that connects up to eight input and six output devices. The standard Max Air includes four MADI input ports and three MADI output ports for I/O connection. An optional SH612 Studio Hub can be included to supply a total of eight MADI input and six MADI output ports.

Analog I/O

All analog I/O is converted between analog and MADI formats via the AM713 Analog to MADI Converter, and the MA703 MADI to Analog Converter. Each unit's main I/O handles 24 signals and also contains an auxiliary stereo analog input or output, and an auxiliary stereo digital input or output (AES/EBU and S/PDIF).

Digital I/O

All digital I/O is converted to and from MADI format via the DM714 AES/EBU to MADI Converter, and the MD704 MADI to AES/EBU Converter. Each unit's main I/O handles 24 signals (12 AES/EBU pairs) and also contains an auxiliary stereo analog input or output, and an auxiliary stereo digital input or output (AES/EBU and S/PDIF). All digital inputs have built in Sample Rate Converters.

Format Conversion

The FC727 is a bidirectional device with 56 channels of sample-rate-converted I/O. All inputs and outputs are converted to and from MADI which are connected to the MADI I/O on the DF64 MADI card or through the optional SH612 Studio Hub. In addition to AES/EBU I/O, the FC727 allows direct connection to several third-party digital formats. Formats supported by the unit are TDIF, ProDigi, SDIF-2, ADAT Optical, and Pro Tools. AES/EBU outputs are always active even when using third-party formats. The FC726 is the same as FC727 but has no support for Pro Tools.

Microphone Inputs

Microphone inputs are handled by the ML530 Mic/Line Interfaces. Each unit contains 24 remote-controlled microphone preamps. Each ML530 is connected to a dedicated AM713 Analog to MADI Converter. Up to seven ML530s may be connected in a system.

Monitoring

The MC524 Monitor Controller provides analog monitor outputs. This unit provides Main (7.1), Alt 1 (5.1), and Alt 2 (stereo) control room monitoring, SLS (7.1), and Cues 1–3 (each stereo) studio monitoring, two talkback preamps, and four listen microphone preamps. The MC524 is connected to a dedicated MA703 MADI to Analog Converter.

Power

Some of the Max Air console components have dual power entry connectors for redundant power supplies. We recommend deriving the two power supplies from different sources to maximize the failsafe capabilities of the system. The best case is to connect one power supply to a UPS (Uninturuptable Power Supply) and the other to a clean technical power source. If a UPS is not used, the power supplies should be connected to seperately protected clean technical power circuits.

Digital Sync

A high quality digital sync source is required for the Max Air console. Some facilities may already have a digital master clock or house reference in place but others may require one. Euphonix has tested several digital sync generators and distribution amplifiers and can supply these devices with the console. Contact a Euphonix sales representative for further information.

We recommend following these guidelines:

- It is important to minimize the timing differences between signal paths to avoid cumulative timing errors. It is good system engineering practice to send sync signals to all system components from one source.
- Sync signals should not be looped and each distribution amplifier should be fed directly from the master clock source.
- Drawings in this installation guide show the use of Word Clock. The user may use either AES/EBU sync or Word Clock.

NOTE: *The SH612's sync connections are designed to be used for in-house factory testing and should not be used in the final installation.*

System Control Connections

Ethernet

Several intelligent system components are connected via RJ45 Ethernet through a EuCon Ethernet switch. These devices include:

- SC261 System Computer
- PC253d Digital Pilot Computers
- PC253i Interface Computer
- CM404 Center Section Module
- CM416 16-channel Modules

Monitor, trackball, and keyboard

The Max Air System Computer is displayed on the CM404 touchscreen. A keyboard and mouse are connected to the CM404.

Firewire

The DF64 Digital Frame is controlled by a PC that requires no user interaction and configures the DF64 on startup. The PC253d is connected to its DF64 via firewire.

TCC Control

The PC253i Interface computer also requires no user interaction. It connects to the MC524 Monitor Interface and up to seven ML530 Mic/Line Interfaces via a TCC connection. It also connects to the MIDI Interface via a parallel connector.

GPIO Control

The GP132 provides GPIO control for the system. The GP132 connects via MIDI in and out to a MIDI Interface (supplied). This interface is connected to the PC253i Interface Computer via the parallel port.

Estimating System Requirements

This section helps estimate the system requirements for a particular installation. Contact a Euphonix representative for an exact specification. Use the following categories to determine the Max Air components necessary for your studio. Most of the studio details considered here are relevant to any digital mixing system.

Number of CM416 16-channel Sections

One application may require a small, powerful console to control many inputs from a small number of faders. Other applications may trade console size for the power of accessing each input quickly without having to swap the fader or recall a Layout. Specify enough physical faders to conveniently control the required number of inputs. There can be up to three fully loaded CM416s yielding 48 faders and 96 channels (there could be four CM416s if two are half-loaded CM416L or R).

I/O Specification

When considering I/O requirements, count the number of analog and AES/EBU inputs and outputs required to hook up all equipment and auxiliary panels for extra equipment. Do not specify I/O from the console perspective. For example, it is not efficient to specify one analog input and one analog output to be used as an insert point for each channel input. For microphone preamps, count the maximum number of preamps required including extras rather than one preamp for every channel.

Number of ML530 Mic/Line Interfaces

Each ML530 contains 24 remote-controlled microphone preamps. Note that each ML530 includes one dedicated AM713 Analog to MADI Converter.

Total = (Microphone Preamps required / 24)

Number of AM713 Analog to MADI Converters

Each AM713 contains 24 analog to MADI converters (equipment outputs).

Total = (Analog inputs required / 24) + (1 per ML530)

Number of MA703 MADI to Analog Converters

Each MA703 contains 24 MADI to analog converters (equipment inputs).

Total = (Analog outputs required / 24) + (1 for MC524)

Number of DM714 AES/EBU to MADI Converters

Each DM714 routes 24 digital inputs (12 AES/EBU pairs) to MADI converters (equipment outputs).

Total = (AES/EBU inputs required / 24)

Number of MD704 MADI to AES/EBU Converters

Each MD704 routes 24 MADI channels to 24 digital outputs (12 AES/EBU pairs) (equipment inputs).

Total = (AES/EBU outputs required / 24)

Number of FC726 Format Converters

Each FC726 is a bidirectional device that contains 56 sample-rate selectable AES/EBU inputs and outputs (112 signals). It also enables format conversion of 56 third-party format digital channels.

Total = (Format-converted Inputs or Outputs / 56)

Number of FC727 Format Converters

Each FC727 is a bidirectional device that contains 56 sample-rate selectable AES/EBU inputs and outputs (112 signals). It also enables format conversion of 56 third-party format digital channels (adds Pro Tools).

Total = (Format-converted Inputs or Outputs / 56)

The following chart summarizes this section:

Table 1-1 Summary of Max Air Components

Component	Function	Number	Notes
CM404	Contains 8 faders for masters, 17-inch Touch-screen, and the Superchannel controls.	1 required (max)	Ethernet device
CM416	Contains 16 physical faders that control two layers of 16 inputs.	1 required 3 full max	Ethernet device
SC261 System Computer	Master system computer	1 required	Ethernet device
PC253i Interface Computer	Computer for MC524, ML530 and MIDI I/F	1 required	Ethernet device. Connects to MC524 and up to 7 ML530s via TCC. Connects to MIDI I/F via parallel port. Connects to SH612 (optional) via serial port.
PC253d Digital Pilot	Configures DF64	1 required (max 1)	Ethernet device. Connects to DF64 via firewire.
GP132 Input/Output and Relay System	Provides up to 32 input/output relay closures	Optional 4 supported	MIDI device. Connects to MIDI I/F.
MC524 Monitor Interface	Analog monitor output controller	1 required	TCC connection to Interface Pilot. 1 MA703 is required (standard).
ML530 Mic/Line Interface	24 remote-control microphone preamps	7 max	TCC connection to Interface Pilot. 1 AM713 required per ML530
DF64 Digital Frame	Performs all system DSP	1 required (max)	The DF64 comes with its own PC253d Digital Pilot Computer. 4 MADI In, 3 MADI Out
SH612 Studio Hub	MADI hub	optional (1 max)	Allows 8 input and 6 output devices. Connects to PC253i via control port.
AM713 Analog to MADI Converter	Provides 24 Analog to MADI Converters, Stereo Aux Digital Input (AES/EBU or S/PDIF available), and Aux Stereo Analog Input.	1 required for each ML530 specified.	Requires digital sync reference.
MA703 MADI to Analog Converter	Provides 24 MADI to Analog Converters, Stereo Aux Digital Output (AES/EBU or S/PDIF available), and Aux Stereo Analog Output.	1 required for use with the MC524.	Requires digital sync reference.
DM714 AES/EBU to MADI Converter	Provides 24 AES/EBU to MADI Converters, Stereo Aux Digital Input (AES/EBU or S/PDIF available), and Aux Stereo Analog Input.	Optional	Requires digital sync reference.
MD704 MADI to AES/EBU Converter	Provides 24 MADI to AES/EBU Converters, Stereo Aux Digital Output (AES/EBU or S/PDIF available), and Aux Stereo Analog Output.	Optional	Requires digital sync reference.
FC727 Digital Format Converter	Provides 56 channels of format converted inputs and outputs (112 channels total). Supports MADI, AES/EBU, T-DIF, ADAT Optical, Protools, S-DIF2, ProDigi.	Optional	Requires digital sync reference.
FC726 Digital Format Converter	Provides 56 channels of format converted inputs and outputs (112 channels total). Supports MADI, AES/EBU, T-DIF, ADAT Optical, S-DIF2, ProDigi.	Optional	Requires digital sync reference.

Chapter 2: Interconnecting System Components

This chapter summarizes technical information for Max Air's components, including size, weight, power consumption, cooling, and fuse requirements and shows their interconnections. To plan an installation, examine Figure 2-1 to learn about suggested equipment locations. The Sync, MADI, and Control hookup diagrams (Figure 2-7 through Figure 2-10) all show maximum cable distances.

Component Specifications

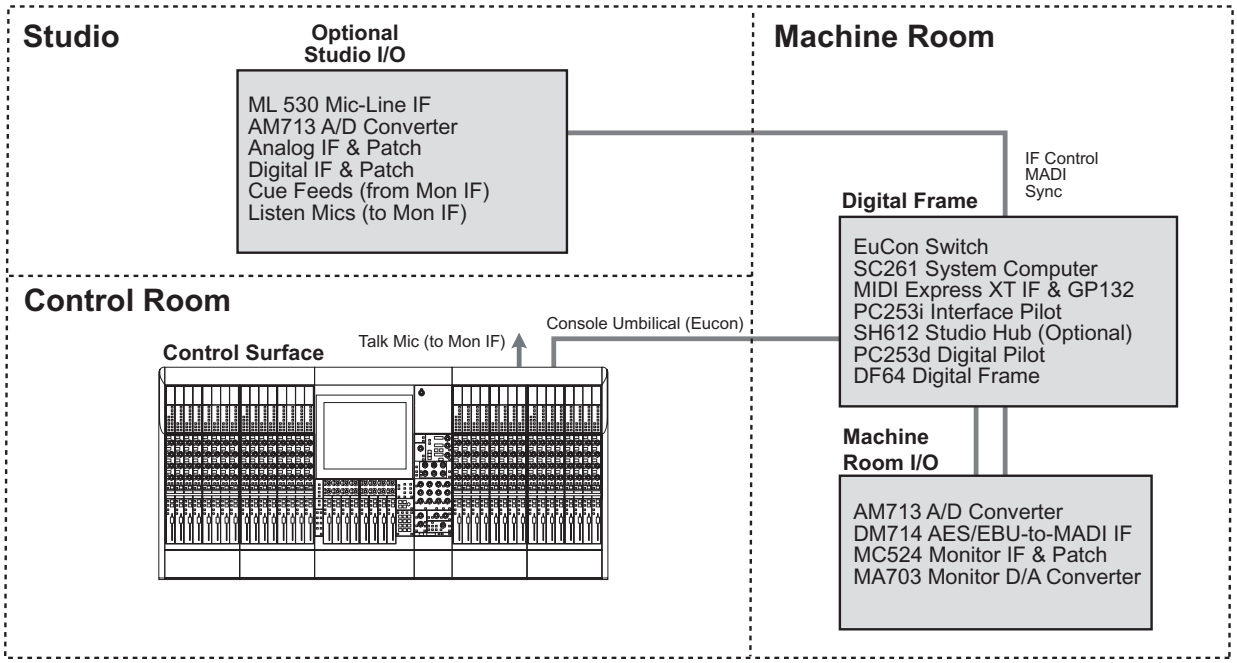
Table 2-1 Max Air Components: Dimensions, Power Consumption, Heat Dissipation

Component	Height	Width	Depth	Weight	Typical Power Consumption	Heat Dissipation
CM404	8.4 in 21 cm	22.3 in 57 cm	35.4 in 90 cm	69 lb 32 kg	PSU 1: 50 W PSU 2: 50 W	520 BTU/hr
CM416	8.4 in 21 cm	24.3 in 62 cm	33.5 in 84 cm	82 lb 37 kg	PSU 1: 50 W PSU 2: 50 W	600 BTU/hr
CM416HL	8.4 in 21 cm	24.3 in 62 cm	33.5 in 84 cm	71 lb 33 kg	PSU 1: 50 W PSU 2: 50 W	520 BTU/hr
CM416HR	8.4 in 21 cm	24.3 in 62 cm	33.5 in 84 cm	71 lb 33 kg	PSU 1: 50 W PSU 2: 50 W	520 BTU/hr
GP132 Input/Output and Relay System	1.75 in 44.5 mm 1RU	19 in 483 mm	6.4 in 163 mm	3.5 lb 1.6 kg	15 W	55 BTU/hr
MIDI Express XT MIDI Communication	1.75 in 44.5 mm 1RU	19 in 483 mm	5.5 in 140 mm	3 lb 1.4 kg	10 W	35 BTU/hr
MC524 Monitor Interface	3.5 in 89 mm 2RU	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	17 lb 7.7 kg	97 W	240 BTU/hr
ML530 Mic/Line Interface	3.5 in 89 mm 2RU	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	17 lb 7.7 kg	86 W	345 BTU/hr
SC261 System Computer	3.5 in 89 mm 2RU	17 in/432 mm (19 in/483 mm faceplate)	25 in 560 mm	23 lb 10.5 kg	PSU 1: 52 W PSU 2: 52 W	685 BTU/hr
PC253d/i Digital Pilot	3.5 in 89 mm 2RU	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	23 lb 10.5 kg	PSU 1: 52 W PSU 2: 52 W	685 BTU/hr
DF64 Digital Frame	15.75 in 400 mm	19 in 483 mm	17.3 in 440 mm	≅80 lb 36.4 kg	PSU 1: 50 W PSU 2: 50 W	1025 BTU/hr
SH612 Studio Hub	3.5 in 89 mm 2RU	17 in432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	12 lb 7.7 kg	PSU 1: 54 W PSU 2: 54 W	345BTU/hr
AM713 Analog to MADI Converter	3.5 in 89 mm 2RU	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	17 lb 7.7 kg	54 W	175 BTU/hr
MA703 MADI to Analog Converter	2RU 3.5 in 89 mm	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	17 lb 7.7 kg	50 W	175 BTU/hr
DM714 AES/EBU to MADI Converter	2RU 3.5 in 89 mm	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	17 lb 7.7 kg	25 W	90 BTU/hr
MD704 MADI to AES/EBU Converter	2RU 3.5 in 89 mm	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	17 lb 7.7 kg	18 W	90 BTU/hr
FC727 Digital Format Converter	2RU 3.5 in 89 mm	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	13.5 lb 6 kg	50 W	175 BTU/hr
FC726 Digital Format Converter	2RU 3.5 in 89 mm	17 in/432 mm (19 in/483 mm faceplate)	18.5 in 470 mm	13.5 lb 6 kg	50 W	175 BTU/hr

Table 2-2 Fuse Ratings for Max Air Components

Component	100/115/120 VAC	220/230/240 VAC	How to Change Voltage Setting
CM404	T5 A	T5 A	autoranging
CM416	T5 A	T5 A	autoranging
GP132 General Purpose Input/ Output and Relay System	2 mA	2 mA	autoranging
MIDI Express XT MIDI Communication Interface	125 mA	125 mA	side panel selector switch
MC524 Monitor Interface	6 A	3 A	autoranging
ML530 Mic/line Interface	6 A	3 A	autoranging
SC261 System Computer	6 A	3 A	autoranging
PC253d/i Digital Pilot	6 A	3 A	autoranging
DF64 Digital Frame	5 A breaker	5 A breaker	autoranging
SH612 Studio Hub	F2.5 A	F1.25 A	autoranging
AM713 Analog to MADI Converter	630 mA	315 mA	rear panel selector switch
MA703 MADI to Analog Converter	630 mA	315 mA	rear panel selector switch
DM714 AES/EBU to MADI Converter	630 mA	315 mA	rear panel selector switch
MD704 MADI to AES/EBU Converter	630 mA	315 mA	rear panel selector switch
FC727 Digital Format Converter	T2.5 A	T2.5 A	autoranging
FC726 Digital Format Converter	T2.5 A	T2.5 A	autoranging

Typical Max Air Room and Equipment Layout



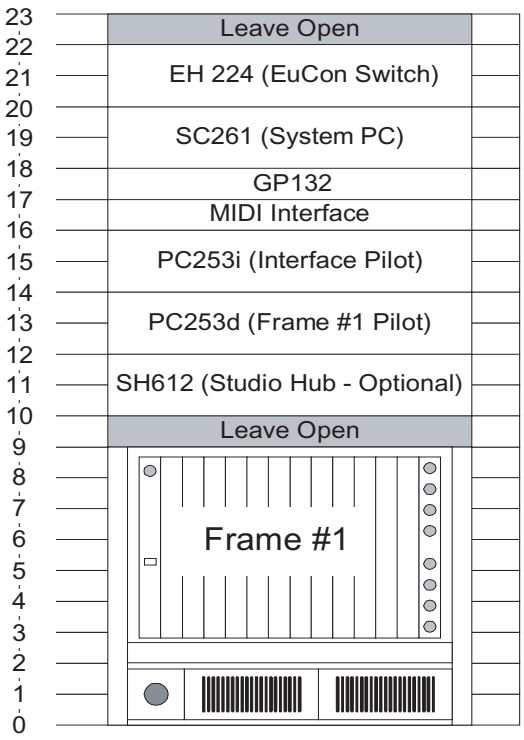


Figure 2-1 Typical Max Air Room and Equipment Layout

Console Dimensions

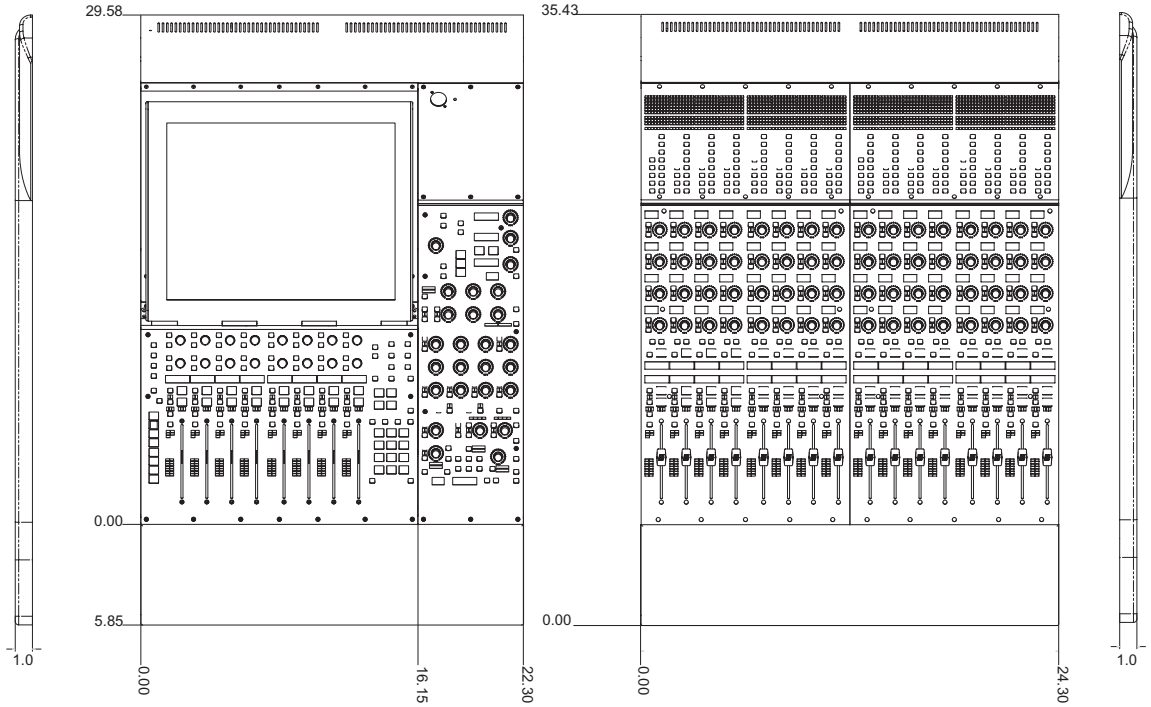


Figure 2-2 Max Air Top Dimensions

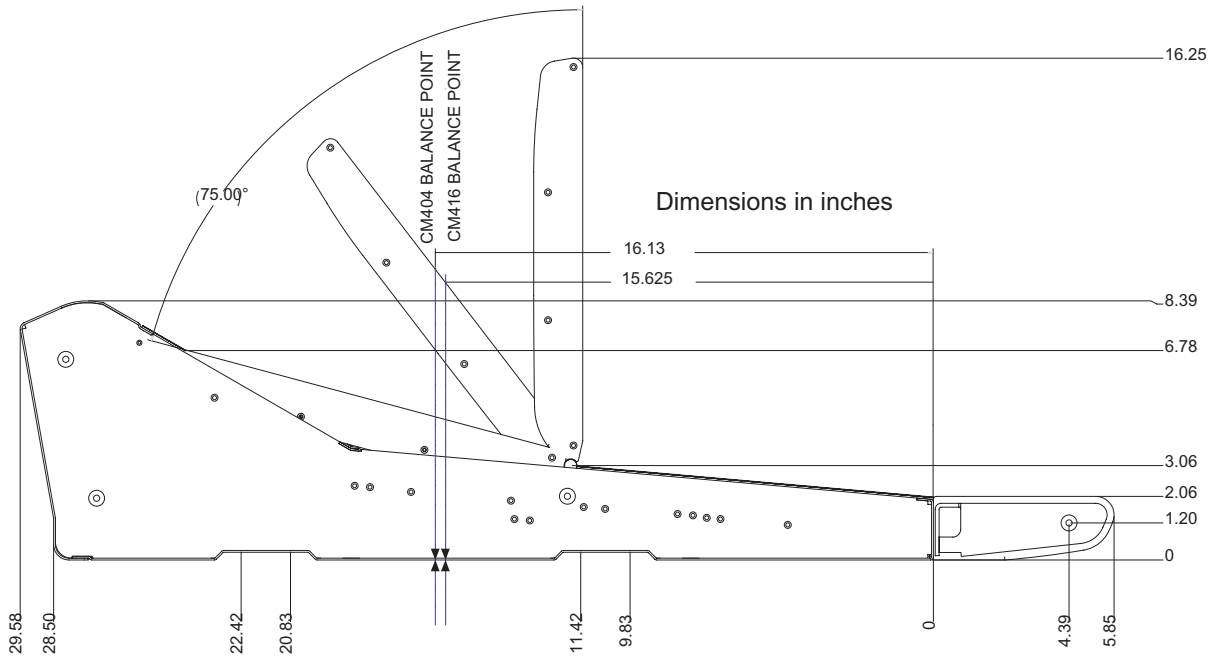


Figure 2-3 Max Air Side Dimensions

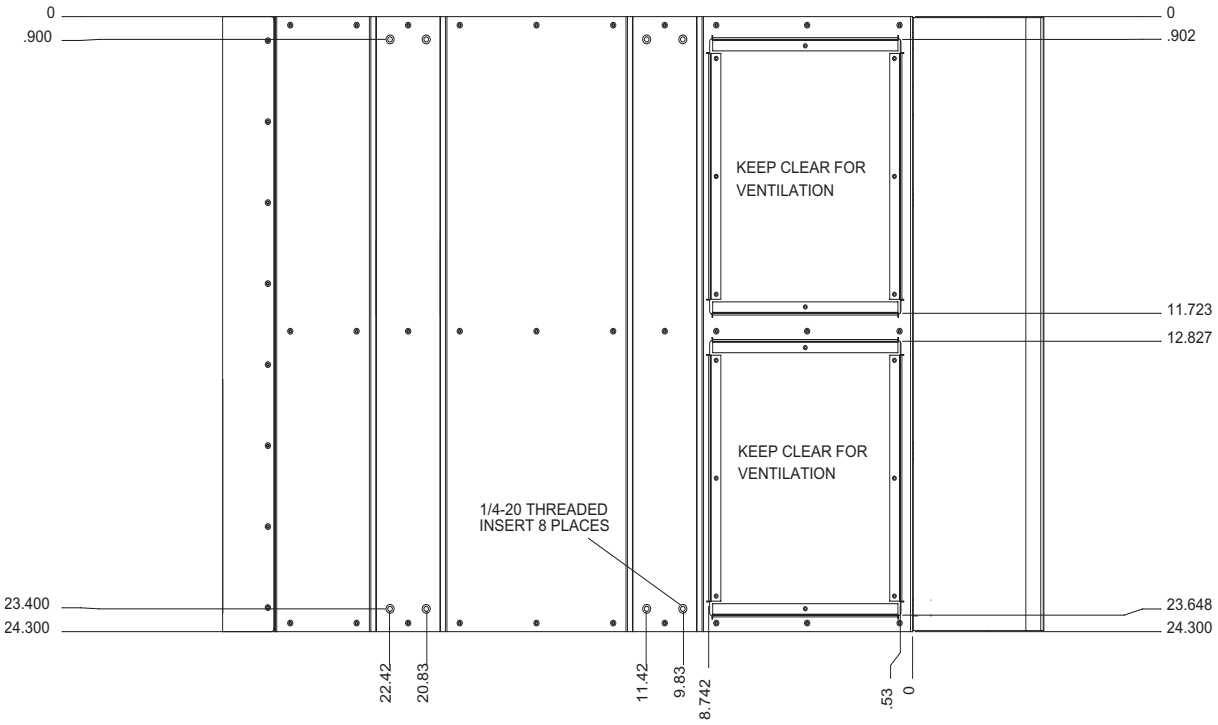


Figure 2-4 CM416 Bottom Dimensions

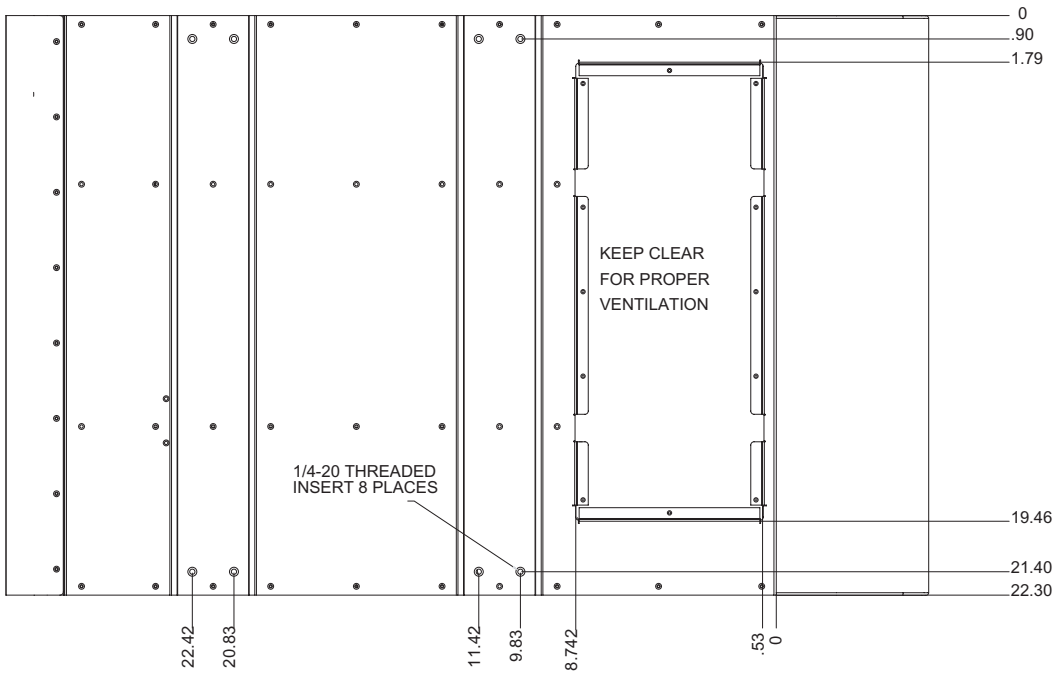


Figure 2-5 CM404 Bottom Dimensions

Audio Hookup

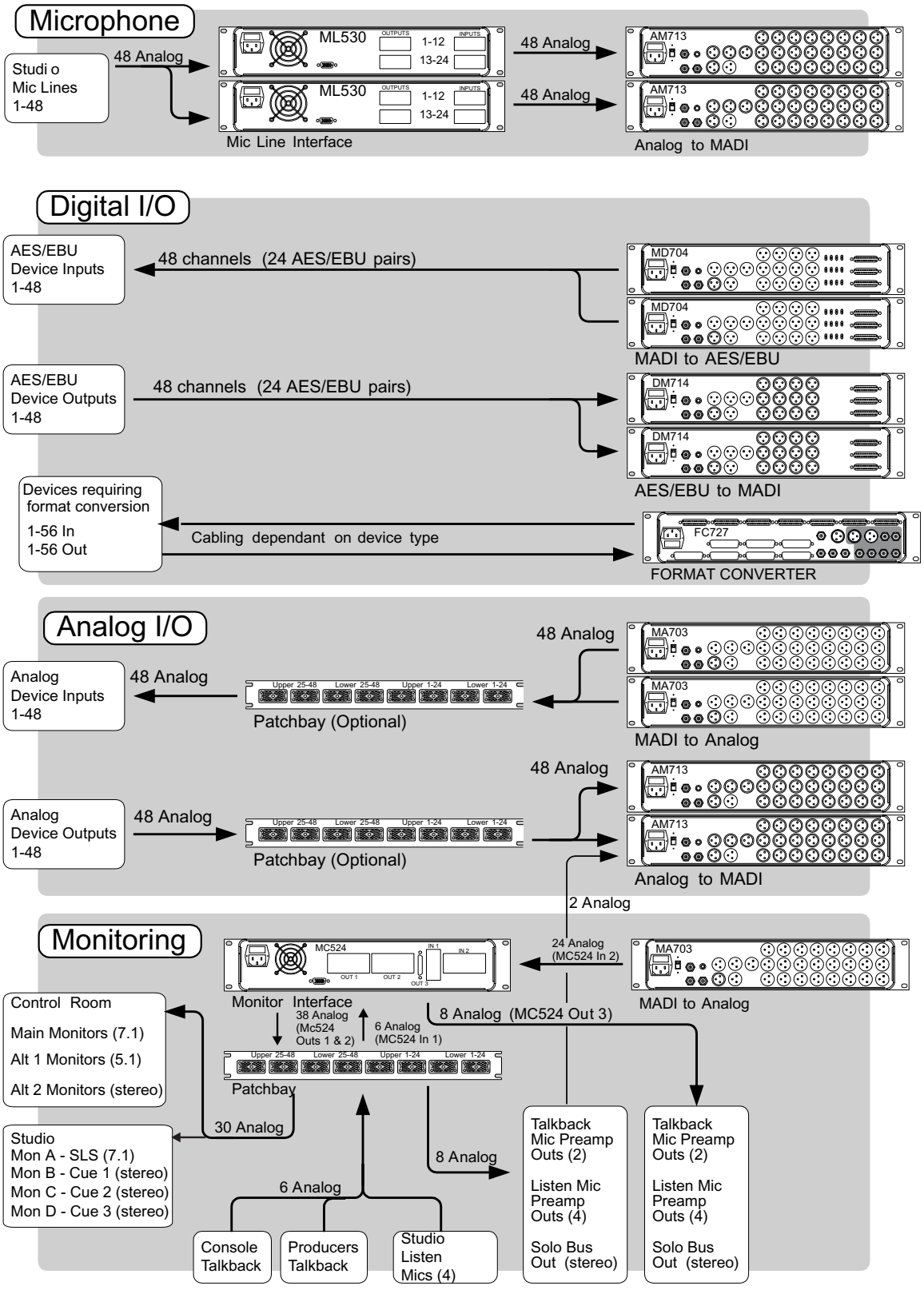


Figure 2-6 Audio Hookup

Synchronization Hookup

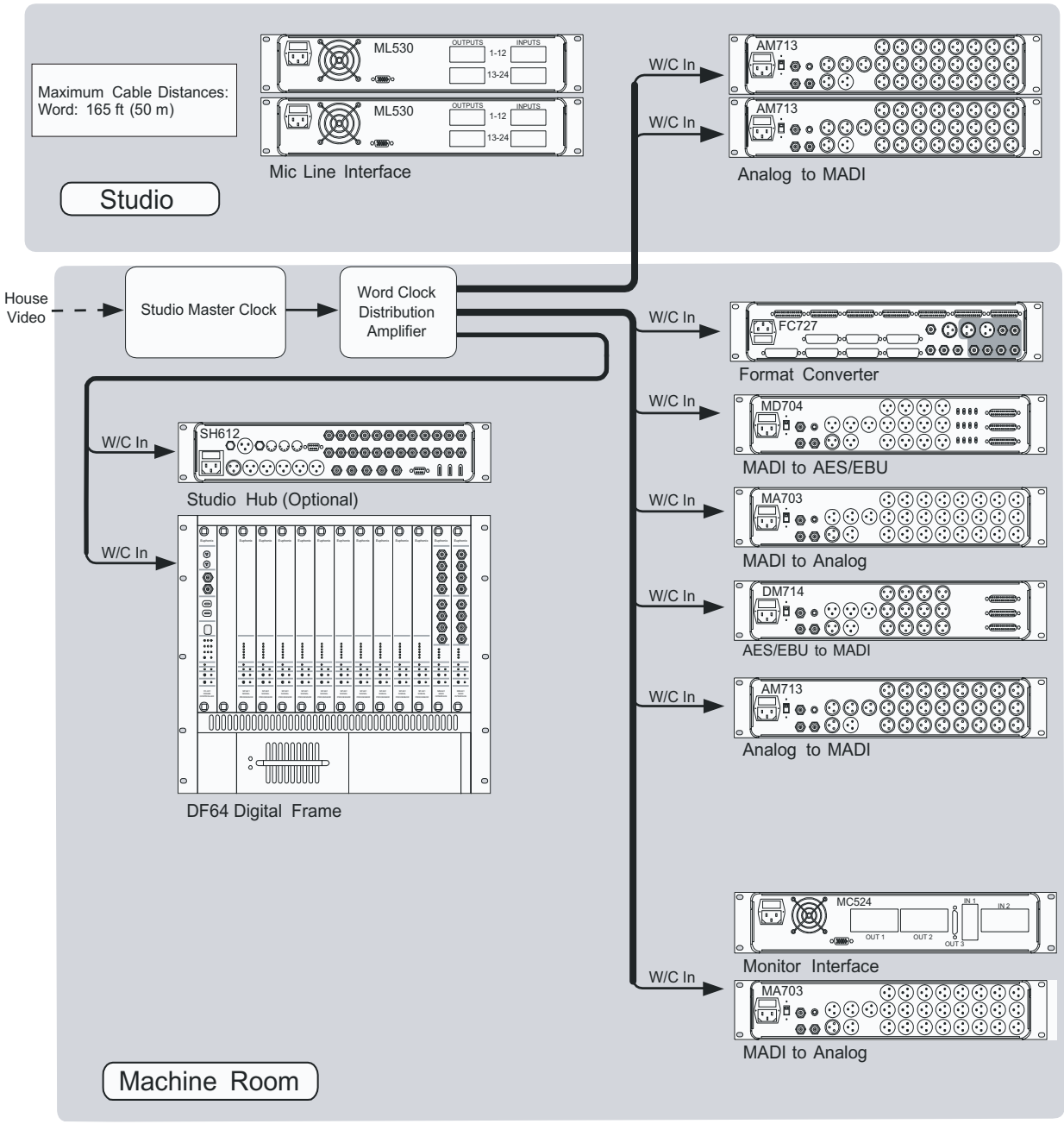


Figure 2-7 Synchronization Hookup (Word Clock shown, AES/EBU sync may be used)

MADI Hookup

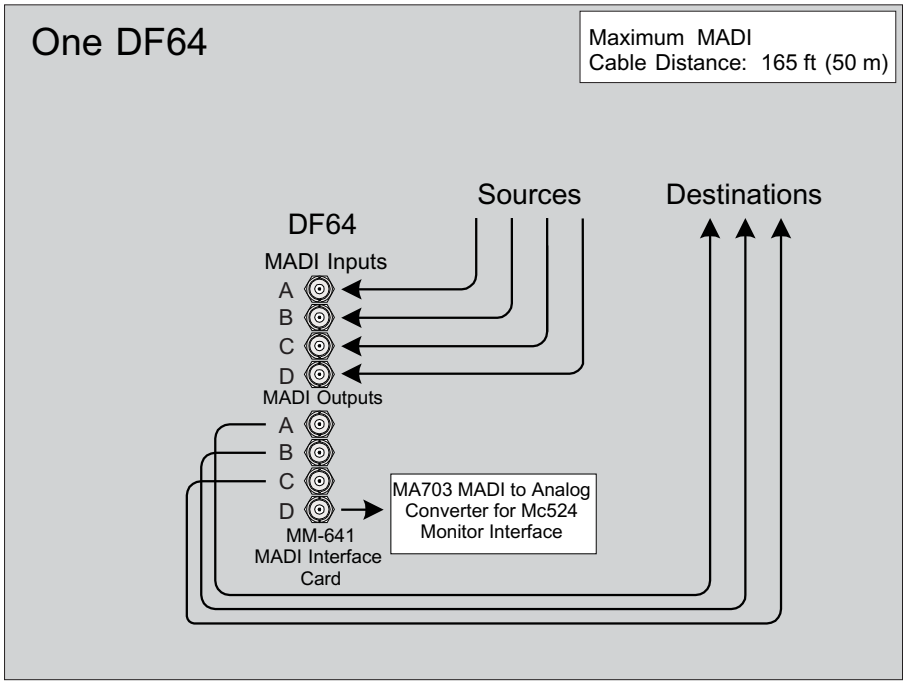


Figure 2-8 MADI hookup for One DF64

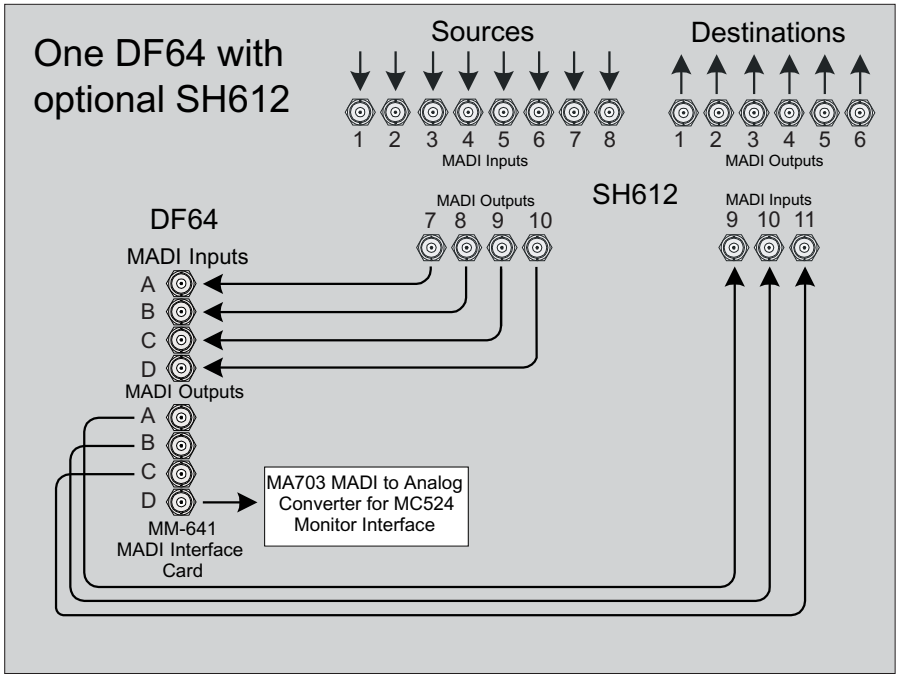


Figure 2-9 MADI Hookup for one DF64 and an Optional SH612 Studio Hub

Control Hookup

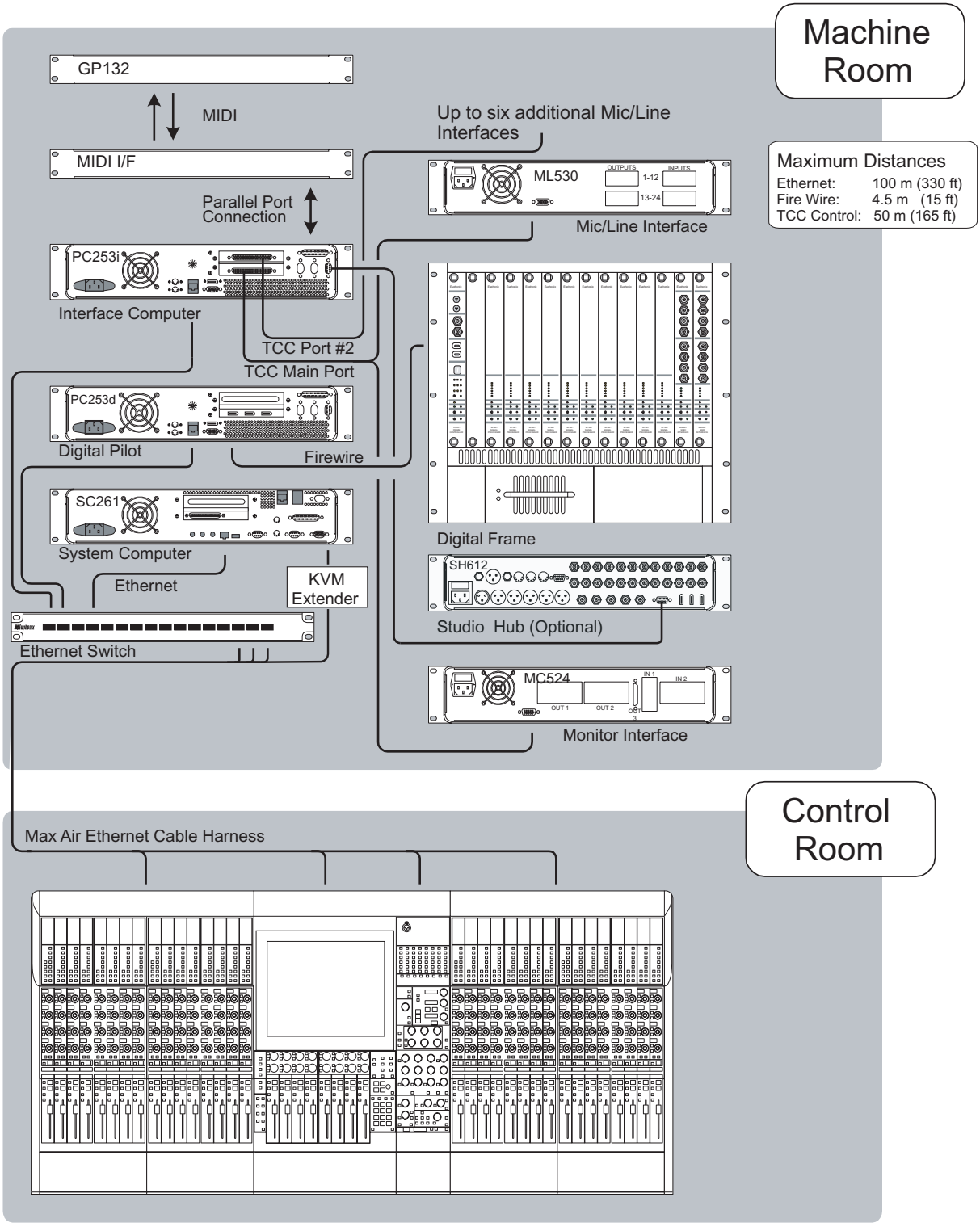


Figure 2-10 Control Hookup

Chapter 3: Max Air Components

This chapter discusses the Max Air components and all connectors necessary for operation. Pinouts for user-wired connections are shown for each component, along with the cables and connectors provided by Euphonix.

DF64 Digital Frame

The DF64 contains three types of cards: FC631 Frame Controller, MM641 MADI Interface, and SP661 Signal Processor (all three shown in Figure 3-2).

Power Connectors (IEC): Accepts standard IEC power cords (provided). Two autoranging switching supplies accept voltages between 100–240 VAC, 50–60 Hz.

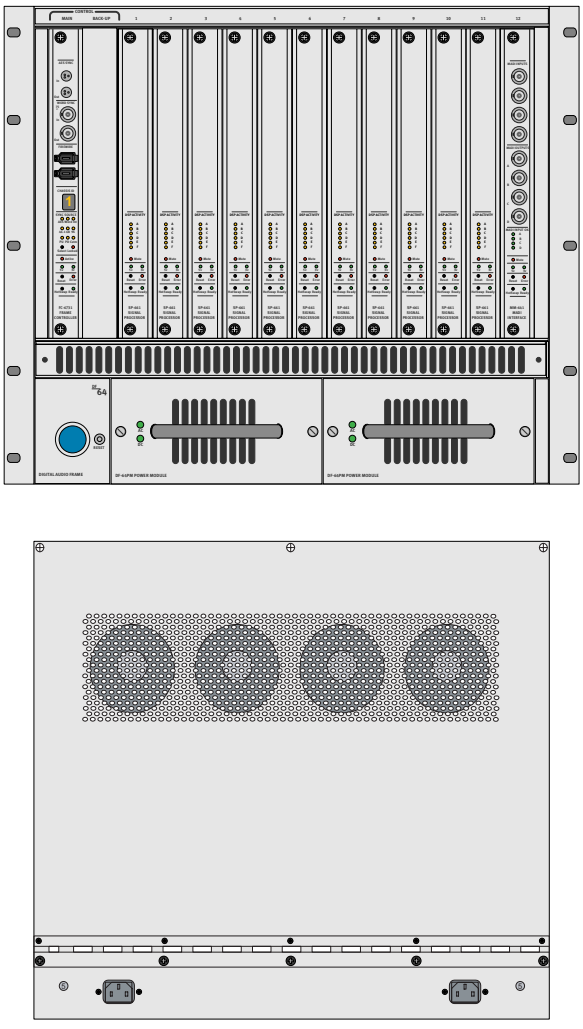


Figure 3-1 DF64 Digital Frame Front and Rear Panels

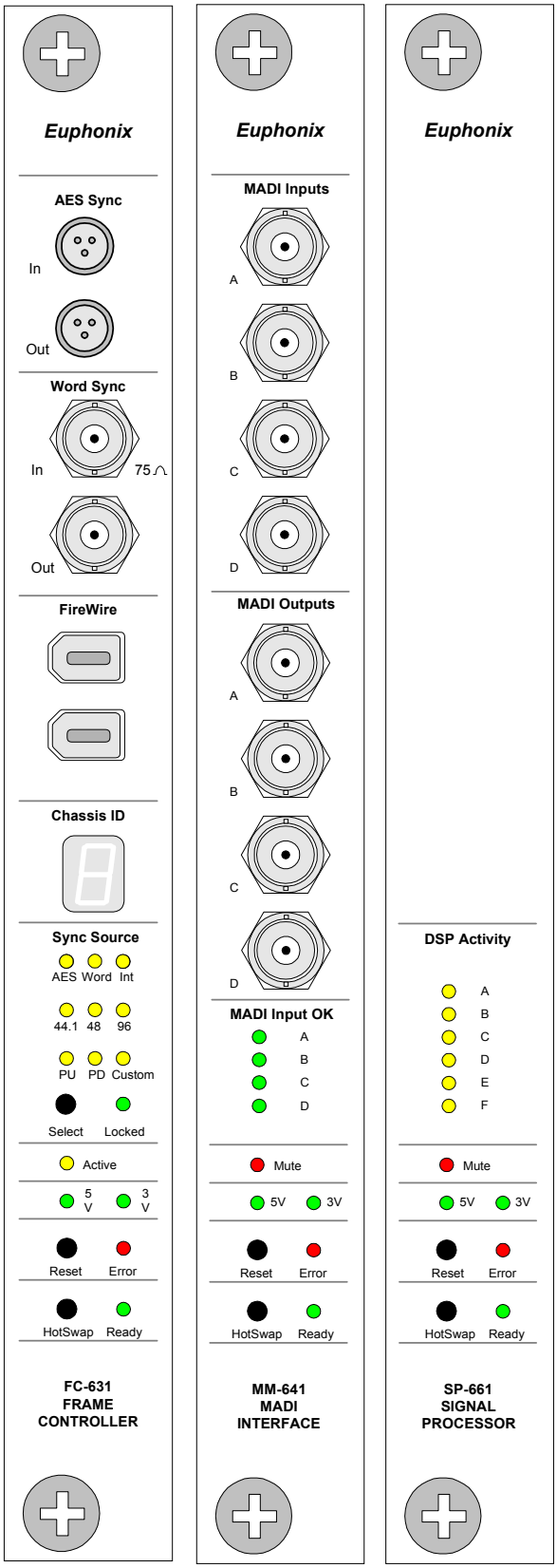


Figure 3-2 FC631, MM641, and SP661 Cards

FC631 Frame Controller

AES Sync In (3-pin Lemo Female): The DF64 Digital Frame clocks to the signal at this port when the sync source is set to AES Sync. Connect this port to a digital sync reference.

AES Sync Out (3-pin Lemo Male): This signal is active regardless of the selected sync source.

Word In (BNC): The DF64 clocks to the signal at this port when the sync source is set to Word Clock. Connect this port to a digital sync reference.

Word Out (BNC): This signal is active regardless of selected sync source.

IEEE 1394 ports (2): High speed communication interface to the PC253d Digital Pilot Computer. This interface carries real-time control and metering data between the PC253d and the DF64. Connect either port to any of the IEEE 1394 ports on the dedicated PC253d for this frame via firewire (provided).

MM641 MADI Interface Card

MADI In (4) and **MADI Out** (4) (8 BNC): Digital audio in and outs. See the MADI Hookup diagrams (Figure 2-9 and Figure 2-8) for details on these connections.

SP661 Signal Processor

This card has no connections.

Max Air Console

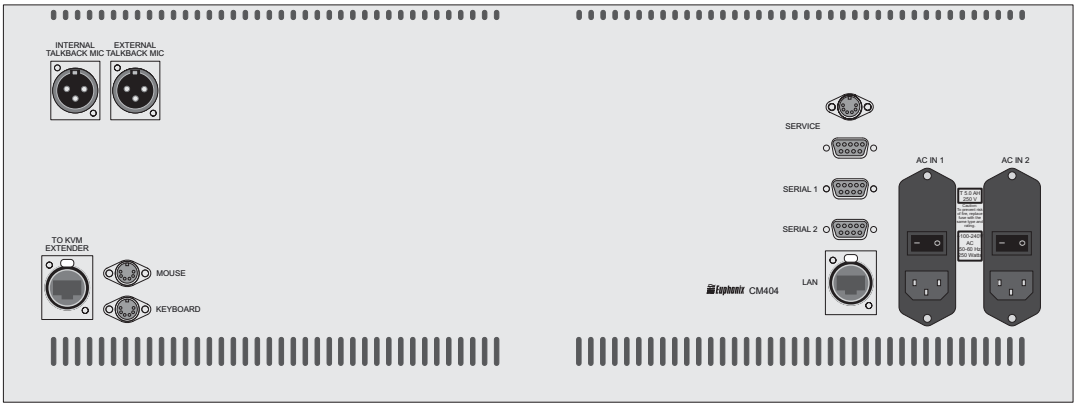


Figure 3-3 CM404 Rear Panel

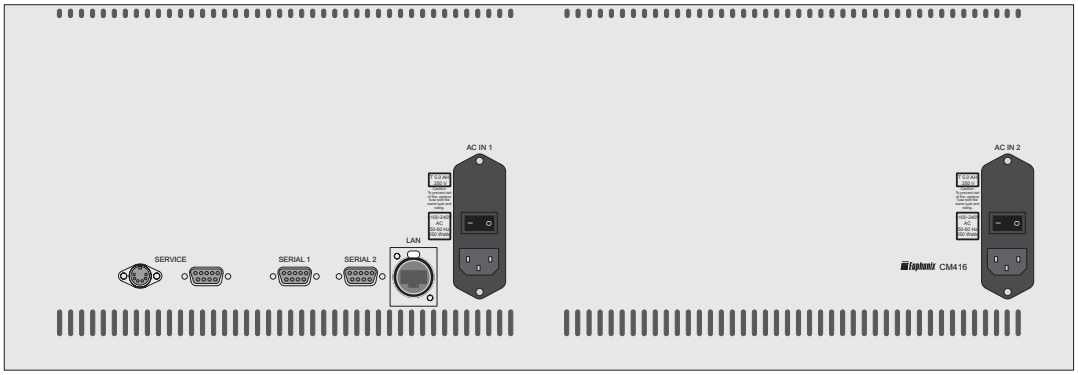


Figure 3-4 CM416 Rear Panel

The Max Air Console consists of several modular components: the CM416 with 16 physical faders and controls, and the CM404 center section. Each component has the following connections:

Power Connectors (IEC): Accepts two standard IEC power cords (provided). Two autoranging switching supplies accept voltages between 100–240 VAC, 50–60 Hz.

LAN Port (RJ45): Connect to EuCon Network Switch via RJ45 through the console Ethernet harness (provided).

To KVM Extender (RJ45): Connect to KVM extender (CM404 only).

Talkback (XLR): Connect to the internal and external talkback microphones.

Keyboard and Mouse (PS2): Connect to the keyboard and mouse or trackball.

Serial 1, 2 (DB9): RS232 serial ports (for service only).

Service (DB15HD, PS2): VGA video and keyboard connection (for service only).

SC261 System Computer

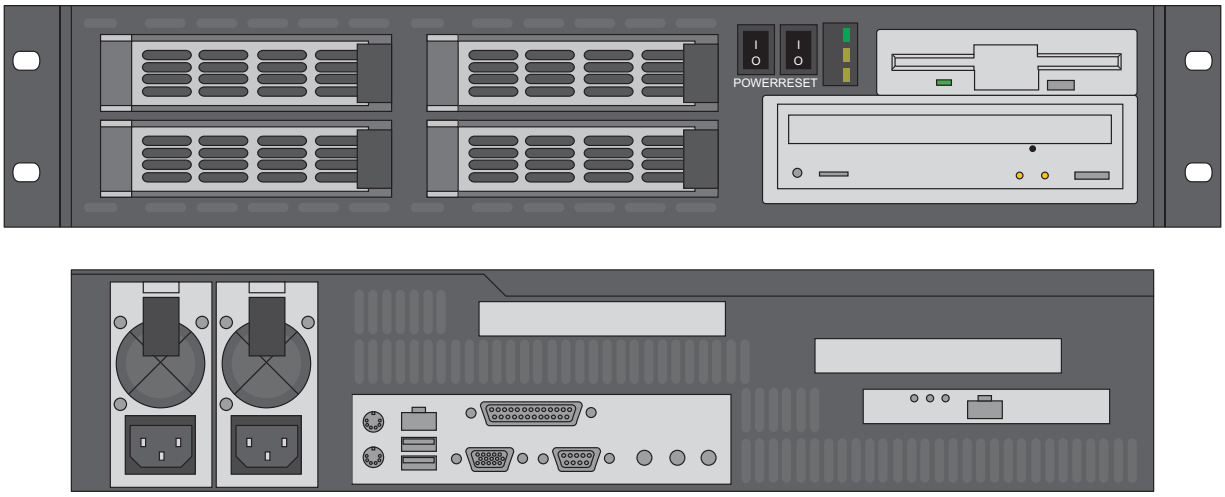


Figure 3-5 SC261 Front and Rear Panels

VGA Connector (DB-15): Main video monitor connection.

Keyboard (PS2): Main keyboard connection.

Mouse (PS2): Main trackball connection.

Serial Port 1 (DB-9): Touchscreen control connection.

Connect the machine room KVM extender to the VGA, keyboard, and mouse connectors on the rear panel of the SC261. A second KVM extender is built into the CM404. Keyboard and mouse connections are located on the back of the CM404. The KVM extenders are connected by a single cable built into the console ethernet harness (provided).

LAN Port 1 (Onboard RJ45): Connect to EuCon Network Switch via RJ45 (provided).

LAN Port 2 (Auxilary RJ45): Optional connection for external network.

Power Connectors (IEC): Accepts two standard IEC power cords (provided). Two autoranging switching supplies accept voltages between 100–240 VAC, 50–60 Hz.

PC253d Digital Pilot Computer

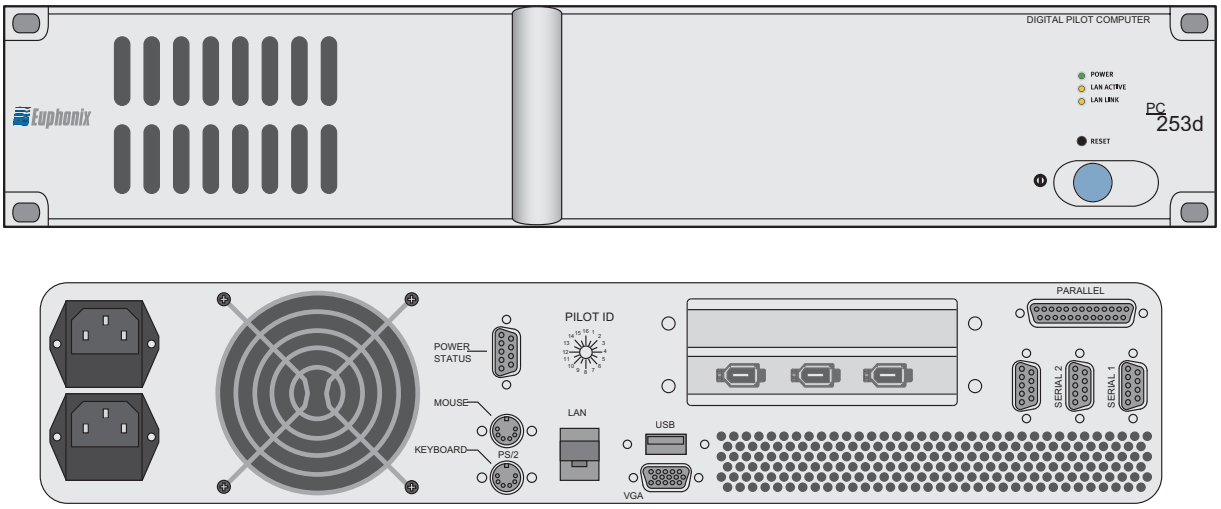


Figure 3-6 PC253d Front and Rear Panels

IEEE 1394 Ports (3 IEEE connectors): Connect any port to IEEE 1394 connector on the FC631 card in the respective DF64 via firewire (provided).

Network Port (RJ45): Connect to EuCon Network Switch via RJ45 (provided).

Power Connectors (IEC): Accepts two standard IEC power cords (provided). Two autoranging switching supplies accept voltages between 100–240 VAC, 50–60 Hz.

PC253i Interface Computer

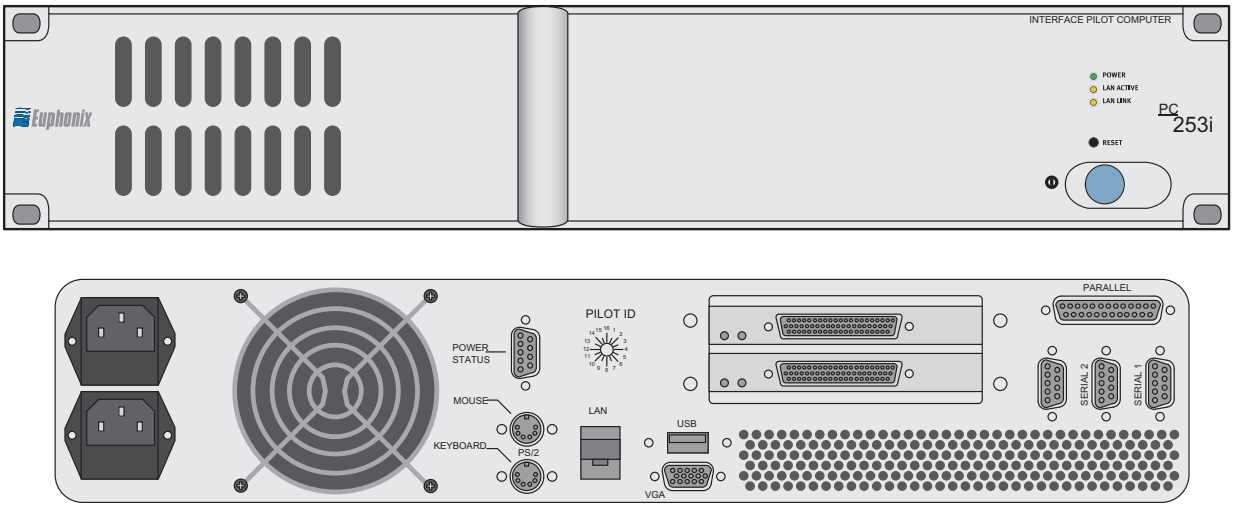


Figure 3-7 PC253i Front and Rear Panels

Parallel Port (DB-25): Connect to MOTU MIDI I/F via DB-25 (provided).

TCC Main Port (Lower DB-62): Connect TCC breakout cable (provided) to this port. This cable breaks out to four DB-15 connectors that provide control hookup for the MC524 Monitor Interface and three ML530 Mic/Line Interfaces.

TCC Extension Port (Upper DB-62): Connect a second TCC breakout cable (provided) to this port to connect up to four additional ML530 Mic/Line Interfaces.

Network Port (RJ45): Connect to the EuCon Network Switch via the RJ45 cable (provided).

Parallel Port (DB-25): Connect to MIDI Interface.

Serial Port 1 (DB-9):Connect to control port on SH612 (optional).

Power Connectors (IEC): Accepts two standard IEC power cords (provided). Two autoranging switching supplies accept voltages between 100–240 VAC, 50–60 Hz.

MC524 Monitor Interface

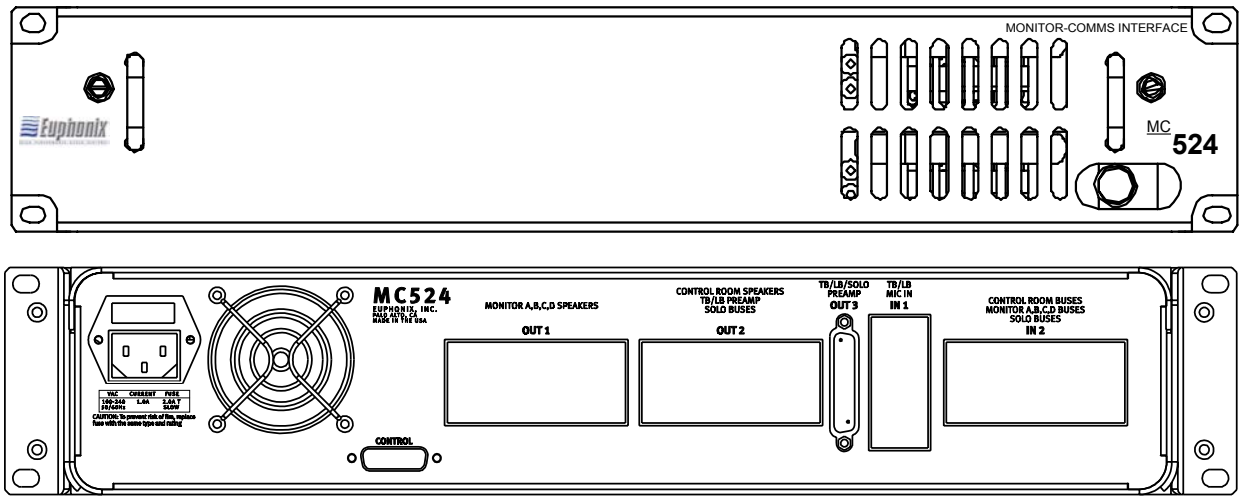


Figure 3-8 MC524 Front and Rear Panels

Power Switch: Powers the unit off/on.

In 1 (38-pin ELCO): Talk Back, Listen Back and Mic inputs. This connector receives four stereo listen channels and two stereo talk mic inputs. Signals can be boosted or attenuated. In a standard patch configuration, input cable fans out to 12 female XLRs.

In 2 (90-pin ELCO): Control Room Buses, Monitor A, B, C, D, and Solo buses inputs. This connector receives eight Monitor A channels, and two channels each for Monitor B, C, D. These signals can be attenuated only and are typically fed from the AM713.

Out 1 (90-pin ELCO): Monitor A, B, C, D Speaker outputs. This connector outputs eight Control Room channels, eight Monitor A channels, and two channels each for Monitor B, C, D, and Solo. The output cable fans out to two 38-pin ELCO/Edak connectors for the Euphonix Patchbay.

Out 2 (90 pin ELCO): Control Room Speakers, Talk Back and Listen Back Preamp, and Solo Buses outputs. This connector outputs eight Control Room Main channels, six Control Room Alt 1 channels, two Control Room Alt 2 channels, four Listen pre, two talk pre and two Solo channels. The output cable fans out to two 38-pin ELCO/Edak connectors for the Euphonix Patchbay.

Out 3 (female DB25): Talk Back, Listen Back, and Solo Preamp outputs. This connector outputs four Listen pre, two Talk Back pre and two Solo channels . Output cable fans out to eight male XLRs.

Control (DB15): Input for digital control signal from Digital Pilot (Euphonix TCC bi-directional serial protocol). All patching, switching, and gain controls are communicated via this connection as well as MC524 IP address.

AC Line In (IEC) and **Fuse Tray**: Accepts standard IEC power cord (provided). An autoranging switching supply accepts voltages between 90–250 VAC, 50–60 Hz.

Input/Output Connections

Table 3-1 In 1 Elco 38 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	M1	Talk 1	A	E	L
2	M2	Talk 2	B	F	M
3	M3	Listen 1	C	H	N
4	M4	Listen 2	D	J	P
5	M5	Listen 3	DD	JJ	PP
6	M6	Listen 4	EE	KK	RR
7			FF	LL	SS
8			HH	MM	TT
9			R	S	V
10			T	U	W
11			X	Z	AA
12			Y	BB	CC

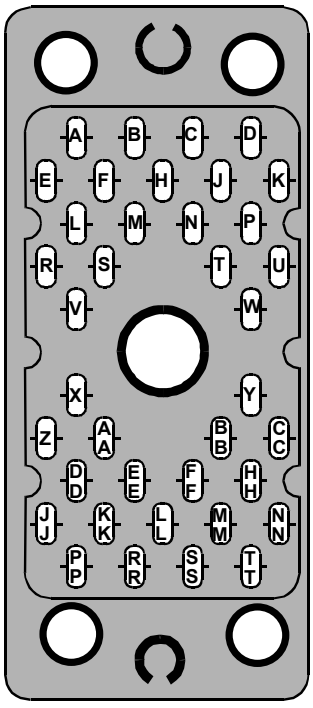


Figure 3-9 Elco 38 Connector

Table 3-2 In 2 Elco 90 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	L3	Cntrl Rm (L)	A	H	R
2	L4	Cntrl Rm (C)	B	J	S
3	L5	Cntrl Rm (R)	C	K	T
4	L6	Cntrl Rm (Sl)	D	L	U
5	L7	Cntrl Rm (Sr)	E	M	V
6	L8	Cntrl Rm (B)	F	N	W
7	L9	Cntrl Rm (Li)	X	AE	AM
8	L10	Cntrl Rm (Ri)	Y	AF	AN
9	L11	Mon A (L)	Z	AH	AP
10	L12	Mon A (C)	AA	AJ	AR
11	L13	Mon A (R)	AB	AK	AS
12	L14	Mon A (Sl)	AC	AL	AT
13	L15	Mon A (Sr)	BJ	BS	BY
14	L16	Mon A (B)	BK	BT	BZ
15	L17	Mon A (Li)	BL	BU	CA
16	L18	Mon A (Ri)	BM	BV	CB
17	L19	Mon B (L)	BN	BW	CC
18	L20	Mon B (R)	BP	BX	CD
19	L21	Mon C (L)	CF	CN	CW
20	L22	Mon C (R)	CH	CP	CX
21	L23	Mon D (L)	CJ	CR	CY
22	L24	Mon D (R)	CK	CS	CZ
23	L1	Solo (L)	CL	CT	DA
24	L2	Solo (R)	CM	CU	BD

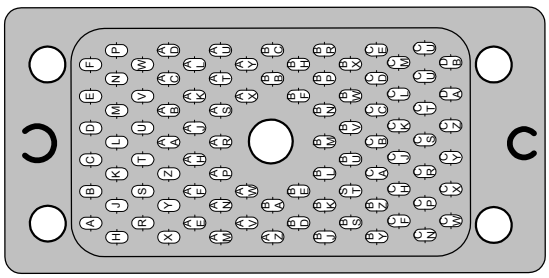


Figure 3-10 Elco 90 Connector

Table 3-3 Out 1 Elco 90 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	BO11	Mon A (L)	A	H	R
2	BO12	Mon A (C)	B	J	S
3	BO17	Mon A (R)	C	K	T
4	BO18	Mon A (Sl)	D	L	U
5	BO19	Mon A (Sr)	E	M	V
6	BO20	Mon A (B)	F	N	W
7	BO21	Mon A (Li)	X	AE	AM
8	BO22	Mon A (Ri)	Y	AF	AN
9	BO23	Mon B (L)	Z	AH	AP
10	BO24	Mon B (R)	AA	AJ	AR
11	BO25	Mon C (L)	AB	AK	AS
12	BO26	Mon C (R)	AC	AL	AT
13	BO27	Mon D (L)	BJ	BS	BY
14	BO28	Mon D (R)	BK	BT	BZ
15			BL	BU	CA
16			BM	BV	CB
17			BN	BW	CC
18			BP	BX	CD
19			CF	CN	CW
20			CH	CP	CX
21			CJ	CR	CY
22			CK	CS	CZ
23			CL	CT	DA
24			CM	CU	BD

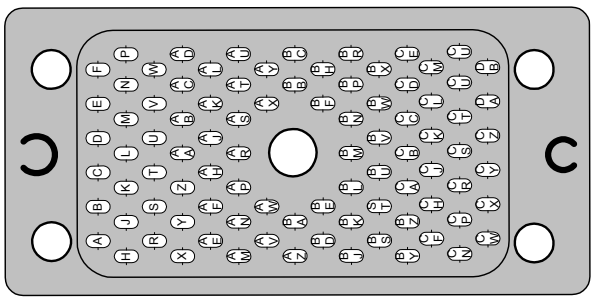


Figure 3-11 Elco 90 Connector

Table 3-4 Out 2 Elco 90 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1	BO31	Solo L	A	H	R
2	BO32	Solo R	B	J	S
3	TL1	Talk 1	C	K	T
4	TL2	Talk 2	D	L	U
5	TL3	Listen 1	E	M	V
6	TL4	Listen 2	F	N	W
7	TL5	Listen 3	X	AE	AM
8	TL6	Listen 4	Y	AF	AN
9	BO3	CR main (L)	Z	AH	AP
10	BO4	CR main (C)	AA	AJ	AR
11	BO5	CR main (R)	AB	AK	AS
12	BO6	Cntrl Rm (Sl)	AC	AL	AT
13	BO7	Cntrl Rm (Sr)	BJ	BS	BY
14	BO8	CR main (B)	BK	BT	BZ
15	BO9	CR main (Li)	BL	BU	CA
16	BO10	CR main (Ri)	BM	BV	CB
17	BO13	CR Alt 1 (L)	BN	BW	CC
18	BO14	CR Alt 1 (C)	BP	BX	CD
19	BO15	CR Alt 1 (R)	CF	CN	CW
20	BO16	CR Alt 1 (Sl)	CH	CP	CX
21	BO29	CR Alt 1 (Sr)	CJ	CR	CY
22	BO30	CR Alt 1 (B)	CK	CS	CZ
23	BO1	CR Alt 2 (L)	CL	CT	DA
24	BO2	CR Alt 2(R)	CM	CU	BD

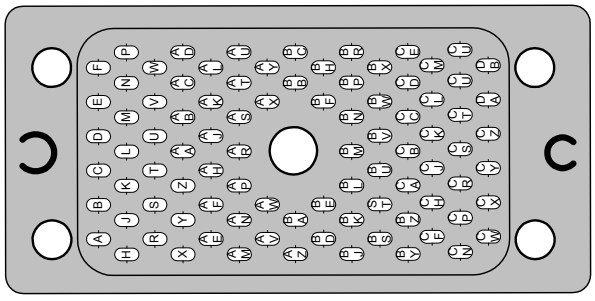


Figure 3-12 Elco 90 Connector

Table 3-5 Out 3 DB-25 Pinout

Crk #	Designator	24 X 32	High	Low	Gnd
1		T1	24	12	25
2		T2	10	23	11
3		L1	21	9	22
4		L2	7	20	8
5		L3	18	6	19
6		L4	4	17	5
7		Solo L	15	3	16
8		Solo R	1	14	2

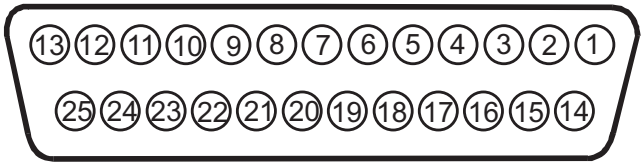


Figure 3-13 DB-25 Connector

ML530 Mic/Line Interface

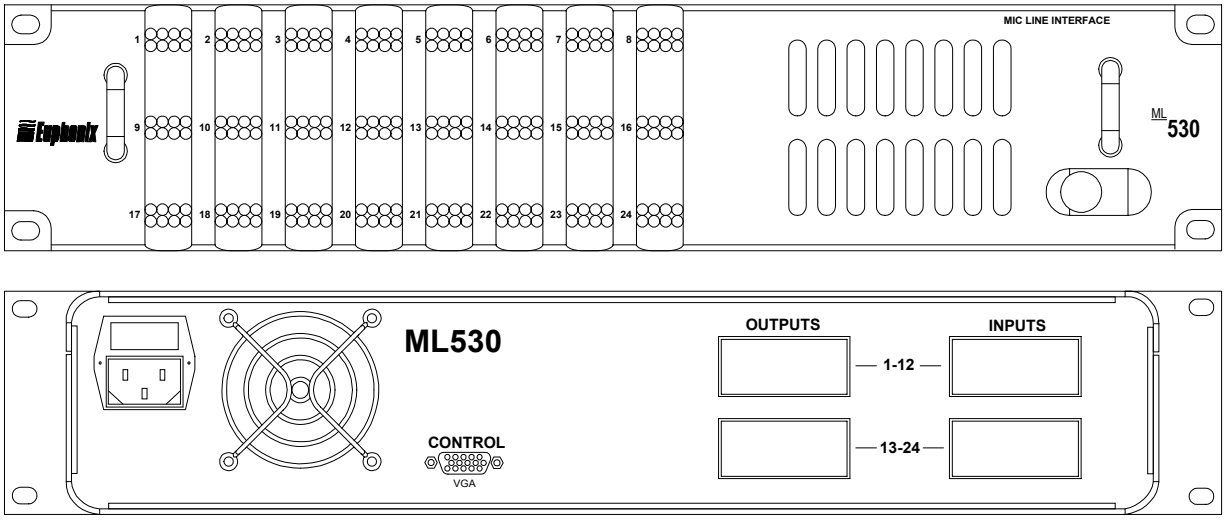


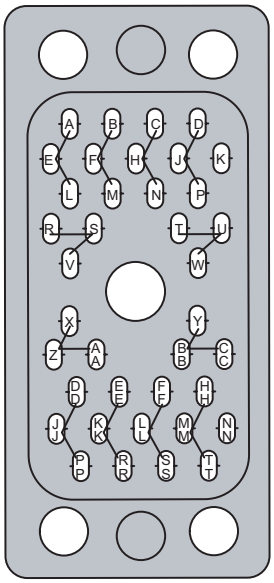
Figure 3-14 ML530 Front and Rear Panels

Inputs (two 38-pin ELCO sockets): A total of 24 microphone inputs are received on two 38-pin ELCO connectors (connectors and pins provided).

Outputs (two 38-pin ELCO sockets): A total of 24 outputs are provided on two 38-pin ELCO connectors. These outputs feed an AM713 Analog to MADI Converter (a 24 male XLR to 38-pin ELCO cable is provided).

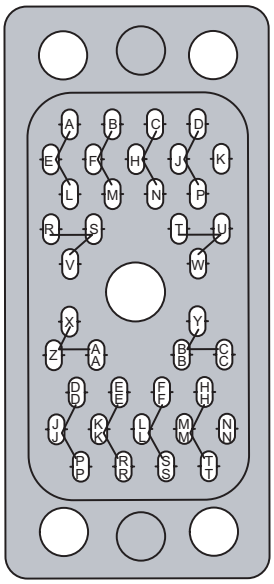
Control (DB-15): Connect to PC253d Digital Pilot Computer via TCC breakout cable (provided). All patching, switching and gain controls are communicated via this connection.

AC Line In (IEC) and **Fuse Tray**: Accepts standard IEC power cord (provided). An autoranging switching supply accepts voltages between 90–250 VAC, 50–60 Hz.



Num	Signal	Wiring Instruction & Description	+	-	G
1	Mic In 1 / Mic In 13	From studio Mic 1 / 13	A	E	L
2	Mic In 2 / Mic In 14	From studio Mic 2 / 14	B	F	M
3	Mic In 3 / Mic In 15	From studio Mic 3 / 15	C	H	N
4	Mic In 4 / Mic In 16	From studio Mic 4 / 16	D	J	P
5	Mic In 5 / Mic In 17	From studio Mic 5 / 17	DD	JJ	PP
6	Mic In 6 / Mic In 18	From studio Mic 6 / 18	EE	KK	RR
7	Mic In 7 / Mic In 19	From studio Mic 7 / 19	FF	LL	SS
8	Mic In 8 / Mic In 20	From studio Mic 8 / 20	HH	MM	TT
9	Mic In 9 / Mic In 21	From studio Mic 9 / 21	R	S	V
10	Mic In 10 / Mic In 22	From studio Mic 10 / 22	T	U	W
11	Mic In 11 / Mic In 23	From studio Mic 11 / 23	X	Z	AA
12	Mic In 12 / Mic In 24	From studio Mic 12 / 24	Y	BB	CC

Figure 3-15 ML530 In 1/In 2 Pinout: Elco 38 Socket



Num	Signal	Wiring Instruction & Description	+	-	G
1	Mic Pre Out 1 / Out 13	To AM713 Analog In 1 / In 13	A	E	L
2	Mic Pre Out 2 / Out 14	To AM713 Analog In 2 / In 14	B	F	M
3	Mic Pre Out 3 / Out 15	To AM713 Analog In 3 / In 15	C	H	N
4	Mic Pre Out 4 / Out 16	To AM713 Analog In 4 / In 16	D	J	P
5	Mic Pre Out 5 / Out 17	To AM713 Analog In 5 / In 17	DD	JJ	PP
6	Mic Pre Out 6 / Out 18	To AM713 Analog In 6 / In 18	EE	KK	RR
7	Mic Pre Out 7 / Out 19	To AM713 Analog In 7 / In 19	FF	LL	SS
8	Mic Pre Out 8 / Out 20	To AM713 Analog In 8 / In 20	HH	MM	TT
9	Mic Pre Out 9 / Out 21	To AM713 Analog In 9 / In 21	R	S	V
10	Mic Pre Out 10 / Out 22	To AM713 Analog In 10 / In 22	T	U	W
11	Mic Pre Out 11 / Out 23	To AM713 Analog In 11 / In 23	X	Z	AA
12	Mic Pre Out 12 / Out 24	To AM713 Analog In 12 / In 24	Y	BB	CC

Figure 3-16 ML530 Out 1/Out 2 Pinout: Elco 38 Socket

SH612 Studio Hub (optional)

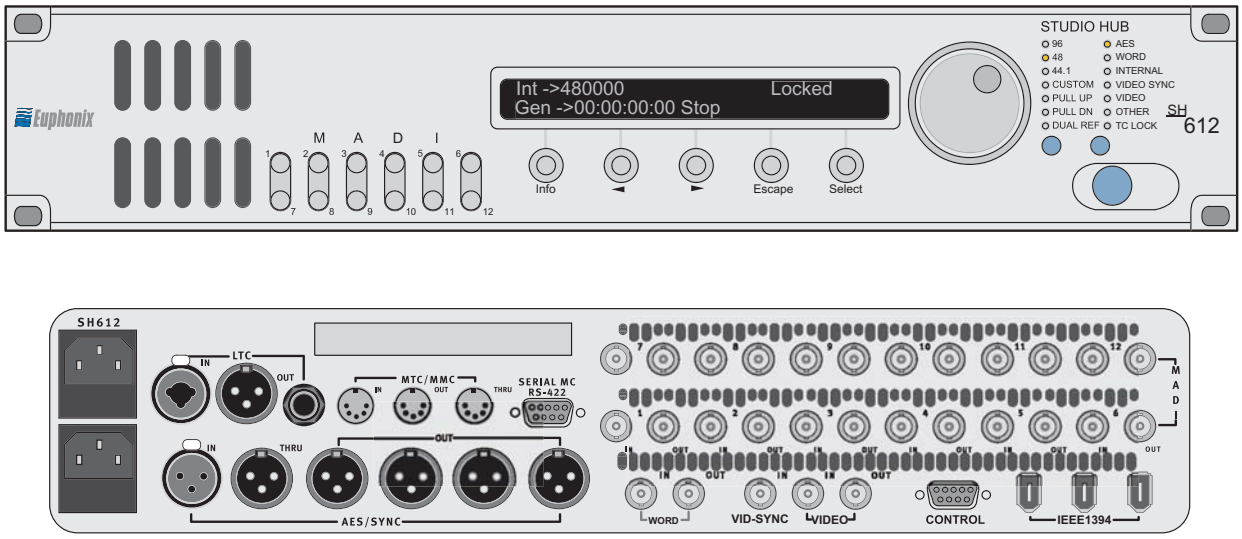


Figure 3-17 SH612 Studio Hub

Video In (BNC): Connect this to house blackburst or composite sync.

AES Sync In (female XLR): Connect this port to a digital sync reference.

AES Sync Out Ports (four male XLR): This signal is active regardless of selected sync source.

Word In (BNC): Connect this port to a digital sync reference.

Word Out (BNC): This signal is active regardless of selected sync source.

MADI In / Out Ports (24 BNC): Digital audio in and outs. See the MADI Hookup diagrams (Figure 2-9 and Figure 2-8) for details on these connections.

Control Port (DB-9): Connect to Serial Port 1 on PC253i Interface Computer.

Power Connectors (IEC): Accepts two standard IEC power cords (provided). Two autoranging switching supplies accept voltages between 100–240 VAC, 50–60 Hz.

NOTE: *The connections described above pertain only to a Max Air console configuration. The other connections on the SH612 are used when installed with the R-1 Digital Audio Multitrack Recorder.*

AM713 Analog to MADI Converter

Front Panel

Figure 3-18 AM713 Front Panel

Signal Strength LEDs: Each of the 28 channels has a four-segment LED that represents the following signal levels: -42 dB, -18 dB, -6 dB (green), -0.05 dB (red).

Trim Pots Access: Three trim pots adjust the maximum analog input level of channels 1–8, 9–16, and 17–24 in 2-dB steps between +12 and +26 dBu.

SR Conv: This indicates sample-rate conversion activity on the auxiliary digital inputs.

Sample Rate LEDs: These LEDs indicate the sample rate to which the converter is currently locked. Sample rates are auto-sensed but can be manually selected on the AM713. Supported sample rates are 96 kHz, 88.2 kHz, 48 kHz, 44.1 kHz, and Custom rates from external sources.

Sample Rate Source LEDs: These LEDs indicate the format of the Sample Rate Source to which the converter is currently locked. Sample Rate Source can be auto-sensed or manually selected. If an external source is not detected, the AM713 reverts to Internal sync. If a manually selected source is not present, the Sample Rate Source indicator blinks.

- **AES**: Sample Rate locked to AES Input.
- **Word**: Sample Rate locked to Word Clock Input.
- **Internal**: Sample Rate locked to its own internal crystal.
- **Auto:** Sample Rate Source has been auto-sensed.

These LEDs appear in the same order in which signals are tested for their presence. This detection procedure occurs when the converters are powered on. The Sample Rate and Sample Rate Source can also be selected manually.

Manual Selection Buttons: The button below each Sample Rate LED row manually selects the sample rate. Also allows manual selection of the Sample Rate Source.

Power Switch: On/Off switch.

Rear Panel

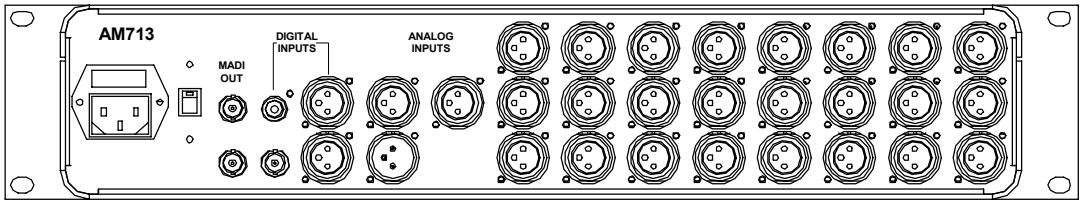


Figure 3-19 AM713 Rear Panel

Input Voltage Selector: This red switch allows the unit to operate in either 100/110/115 VAC or 220/230/240 VAC environments. A fuse must also be changed for 220/230/240 VAC operation. Units are shipped set and fused for 100/110/115 VAC.

Power Connector (IEC) and Fuse Tray: The IEC power connector accepts standard IEC power cords. The fuse tray contains both the active fuse and a spare fuse for 220/230/240 VAC operation.

Analog Inputs (female XLR): 24 balanced, analog inputs on XLR connectors. Input sensitivity is set from the front panel.

Auxiliary Analog Inputs (female XLR): Two balanced analog inputs on XLR connectors. Input sensitivity is set from the front panel.

AES/EBU Digital Input (female XLR): Stereo AES/EBU digital input on one XLR connector. Functions in parallel with the auxiliary S/PDIF input and the two inputs should not be used simultaneously.

S/PDIF Digital Input (RCA): Stereo S/PDIF digital input on one RCA connector. Functions in parallel with the auxiliary AES/EBU input and the two inputs should not be used simultaneously.

AES Sync In (female XLR): Master clock input for the converter when using AES as Sample Rate Source.

AES Sync Thru (male XLR): Outputs the same signal connected to AES Sync In.

Word In (BNC): Master clock input for the converter when using Word Clock as Sample Rate Source.

Word Out (BNC): Outputs a Word clock signal synchronized to the Sample Rate Source. In the presence of an external Word clock input, this connector provides a regenerated version of that input signal. Without an external sample rate source, this connector outputs the internally generated clock signal.

MADI Out (BNC): Outputs the digital audio signal.

- **1–24:** Analog inputs
- **25–26:** Aux analog inputs
- **27–28:** Aux digital inputs

NOTE: *28 channels are always transmitted; dual channels are not used.*

Trim Pots: Four detented trim pots, accessed from the front panel, adjust the analog input level of channels 1–8, 9–16, 17–24, and auxiliary analog in 3 dB steps between +6 and +27 dBU.

MA703 MADI to Analog Converter

Front Panel

Figure 3-20 MA703 Front Panel

Signal Strength LEDs: Each of the 28 channels has a four-segment LED that represents the following signal levels: -42 dB, -18 dB, -6 dB (green), -0.05 dB (red).

Trim Pots Access: Three trim pots adjust the maximum analog output level of channels 1–8, 9–16, and 17–24 in 2-dB steps between +12 and +26 dBu.

SR Conv: This indicates sample-rate conversion activity on the auxiliary digital inputs.

Sample Rate LEDs: These LEDs indicate the sample rate to which the converter is currently locked. Sample rates are auto-sensed. Supported sample rates are 96 kHz, 88.2 kHz, 48 kHz, 44.1 kHz, and Custom rates from external sources.

Sample Rate Source LEDs: These LEDs indicate the format of the Sample Rate Source to which the converter is currently locked. Sample Rate Source can be auto-sensed or manually selected. If an external source is not detected, the MA703 mutes its outputs. If a manually selected source is not present, the Sample Rate Source indicator blinks.

- **AES**: Sample Rate locked to AES Input.
- **Word**: Sample Rate locked to Word Clock Input.
- **MADI**: Sample Rate locked to MADI.
- **Auto:** Sample Rate Source has been auto-sensed.

These LEDs appear in the same order in which signals are tested for their presence. This detection procedure occurs when the converters are powered on. The Sample Rate Source can also be selected manually.

Manual Selection Buttons: The button below each Sample Rate LED row manually selects the sample rate.

Power Switch: On/Off switch.

Rear Panel

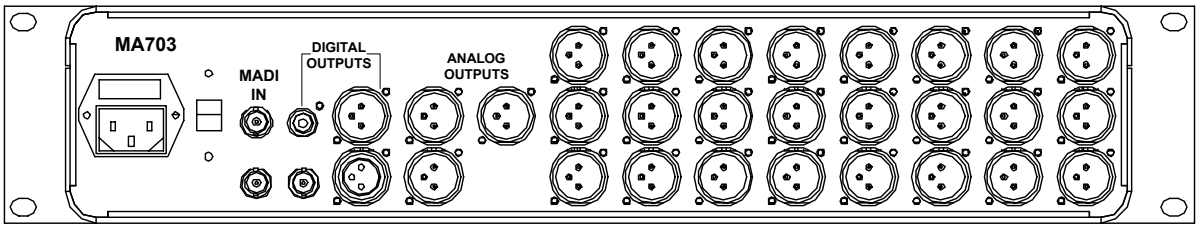


Figure 3-21 MA703 Rear Panel

Input Voltage Selector: This red switch allows the unit to operate in either 100/110/115 VAC or 220/230/240 VAC environments. A fuse must also be changed for 220/230/240 VAC operation. Units are shipped set and fused for 100/110/115 VAC.

Power Connector (IEC) and **Fuse Tray**: The IEC power connector accepts standard IEC power cords. The fuse tray contains both the active and spare fuses.

Analog Outputs (male XLR): 24 balanced analog outputs on XLR connectors. Output level is set from the front panel.

Auxiliary Analog Outputs (male XLR): Two balanced analog outputs on XLR connectors. Output level can is set from the front panel.

AES/EBU Digital Outputs (male XLR): Stereo AES/EBU digital outputs on one XLR connector. Functions in parallel with the auxiliary S/PDIF output and the two inputs should not be used simultaneously.

S/PDIF Digital Outputs (RCA): Stereo S/PDIF digital output on one RCA connector. Functions in parallel with the auxiliary AES/EBU output and the two inputs should not be used simultaneously.

AES Sync In (female XLR): Master clock input for the converter when using AES as the Sample Rate Source.

AES Sync Thru (male XLR): Outputs the same signal connected to AES Sync In.

Word In (BNC): Master clock input for the converter when using Word Clock as Sample Rate Source.

Word Out (BNC): Outputs a Word Clock signal synchronized to the Sample Rate Source. In the presence of an external Word clock input, this connector provides a regenerated version of the input signal. Without an external sample rate source, this connector outputs an internally generated clock signal.

MADI In (BNC): Digital audio signal input.

- **1–24:** analog outputs
- **25–26:** aux analog outputs
- **27–28:** aux digital outputs.

DM714 AES/EBU to MADI Converter

Front Panel

Figure 3-22 DM714 Front Panel

Signal Strength LEDs: Each of the 28 channels has a four-segment LED that represents the following signal levels: -42 dB, -18 dB, -6 dB (green), -.05 dB (red).

Trim Pot: A trim pot adjusts the analog output level of channels A1 and A2 between +12 and +26 dBu in 2-dB steps.

SR Conv: The sample rate of all digital inputs is automatically detected and, if asynchronous, converted to the system Sample Rate. This process is independently applied to each stereo pair such that a combination of synchronous and asynchronous signals can be connected to the DM714. Sample-rate conversion is switched off when synchronous signals are detected. The range of sample-rate conversion is 32–56 kHz. 88.2 or 96 kHz signals cannot be sample-rate converted and are passed through if synchronous. If non-synchronous 88.2 or 96 kHz signals are detected, the upper signal strength LED flashes red to warn the user that the sample rate for those channels is not in sync with the system settings. Sample-rate conversion reduces the bit depth in a 24-bit signal to 20 bits.

Sample Rate LEDs: These LEDs indicate the Sample Rate to which the converter is currently locked. Sample Rates are auto-sensed but can be manually selected. Supported Sample Rates are 96 kHz, 88.2 kHz, 48 kHz, 44.1 kHz and Custom Rates from external sources.

Sample Rate Source LEDs: These LEDs indicate the format of the Sample Rate Source to which the converter is currently locked. Sample Rate Source can be auto-sensed or manually selected. If an external source is not detected, the DM714 reverts to Internal sync. If a manually selected source is not present, the Sample Rate Source indicator blinks.

- **AES**: Sample Rate locked to AES Input.
- **Word**: Sample Rate locked to Word Clock Input.
- **Internal**: Sample Rate locked to its own internal crystal.
- **Auto:** Sample Rate Source has been auto-sensed.

These LEDs appear in the same order in which signals are tested for presence. This detection procedure occurs when the converters are powered on. The Sample Rate and Sample Rate Source can also be selected manually.

Manual Selection Buttons: The button below each Sample Rate LED row manually selects the Sample Rate Source. The DM714 also allows manual selection of the Sample Rate.

Power Switch: On/Off switch.

Rear Panel

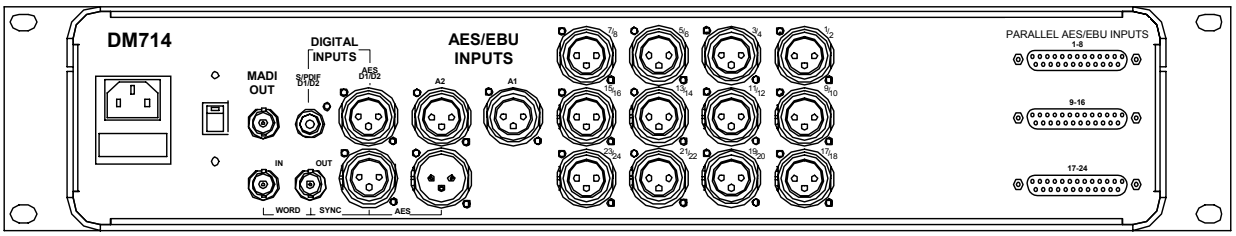


Figure 3-23 DM714 Rear Panel

Input Voltage Selector: This red switch allows the unit to operate in either 100/110/115 VAC or 220/230/240 VAC environments. A fuse must also be changed for 220/230/240 VAC operation. Units are shipped set and fused for 100/110/115 VAC.

Power Connector (IEC) and Fuse Tray: The IEC power connector accepts standard IEC power cords. The fuse tray contains both the active fuse and a spare fuse for 220/230/240 VAC operation.

AES/EBU Digital Inputs (female XLR): 12 AES/EBU stereo inputs.

Parallel AES/EBU Digital Inputs (female DB25): Three 8-channel digital connectors function in parallel with XLR digital inputs, and should not be used simultaneously with the XLR inputs. See Figure 3-24 on page 51 for pinout diagram.

Auxiliary Analog Inputs (female XLR): Two balanced analog inputs on XLR connectors. Input sensitivity is set from the front panel.

Auxiliary AES/EBU Digital Input (female XLR): Stereo AES/EBU digital input on one XLR connector. Functions in parallel with the auxiliary S/PDIF input and the two inputs should not be used simultaneously.

Auxiliary S/PDIF Digital Input (RCA): Stereo S/PDIF digital input on one RCA connector. Functions in parallel with the auxiliary AES/EBU input and the two inputs should not be used simultaneously.

AES Sync In (female XLR): Master clock input for the converter when using AES as Sample Rate Source.

AES Sync Thru (male XLR): Outputs the same signal connected to AES Sync In.

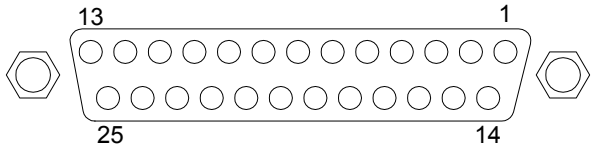
Word In (BNC): Master clock input for the converter when using Word Clock as Sample Rate Source.

Word Out (BNC): Outputs a Word clock signal synchronized to the Sample Rate Source. In the presence of an external Word clock input, this connector provides a regenerated version of that input signal. Without an external sample rate source, this connector outputs the internally generated clock signal.

MADI Out (BNC): Outputs the digital audio signal.

- **1–24:** Main digital inputs
- **25–26:** Aux analog inputs
- **27–28:** Aux digital inputs

NOTE: *28 channels are always transmitted; dual channels are not used.*



Pin #	Connector 1	Connector 2	Connector 3
1	N/C	N/C	N/C
2	N/C	N/C	N/C
3	N/C	N/C	N/C
4	N/C	N/C	N/C
5	N/C	N/C	N/C
6	N/C	N/C	N/C
7	Digital In 7/8+	Digital In 15/16+	Digital In 23/24+
8	GND	GND	GND
9	Digital In 5/6-	Digital In 13/14-	Digital In 21/22-
10	Digital In 3/4+	Digital In 11/12+	Digital In 19/20+
11	GND	GND	GND
12	Digital In 1/2-	Digital In 9/10-	Digital In 17/18-
13	N/C	N/C	N/C
14	N/C	N/C	N/C
15	N/C	N/C	N/C
16	N/C	N/C	N/C
17	N/C	N/C	N/C
18	N/C	N/C	N/C
19	N/C	N/C	N/C
20	Digital In 7/8-	Digital In 15/16-	Digital In 23/24-
21	Digital In 5/6+	Digital In 13/14+	Digital In 21/22+
22	GND	GND	GND
23	Digital In 3/4-	Digital In 11/12-	Digital In 19/20-
24	Digital In 1/2+	Digital In 9/10+	Digital In 17/18+
25	GND	GND	GND

Figure 3-24 DM714 Parallel AES/EBU Digital Inputs: Female DB-25

MD704 MADI to AES/EBU Converter

Front Panel

Figure 3-25 MD704 Front Panel

Signal Strength LEDs: Each of the 28 channels has a four-segment LED that represents the following signal levels: -42 dB, -18 dB, -6 dB (green), -.05 dB (red).

Trim Pot: A trim pot adjusts the analog output level of channels A1 and A2 between +12 and +26 dBu in 2-dB steps.

Sample Rate LEDs: These LEDs indicate the Sample Rate to which the converter is currently locked. Sample Rates are auto-sensed but can be manually selected on the DM714. Supported Sample Rates are 96 kHz, 88.2 kHz, 48 kHz, 44.1 kHz and Custom Rates from external sources.

Sample Rate Source LEDs: These LEDs indicate the format of the Sample Rate Source to which the converter is currently locked. Sample Rate Source can be auto-sensed or manually selected. If an external source is not detected, the MD704 mutes its outputs. If a manually selected source is not present, the Sample Rate Source indicator blinks.

- **AES**: Sample Rate locked to AES Input.
- **Word**: Sample Rate locked to Word Clock Input.
- **MADI**: Sample Rate locked to MADI.
- **Auto:** Sample Rate Source has been auto-sensed.

These LEDs appear in the same order in which signals are tested for presence. This detection procedure occurs when the converters are powered on. The Sample Rate (DM714 only) and Sample Rate Source can also be selected manually.

Manual Selection Buttons: The button below each Sample Rate LED row manually selects the Sample Rate Source.

Power Switch: On/Off switch.

Rear Panel

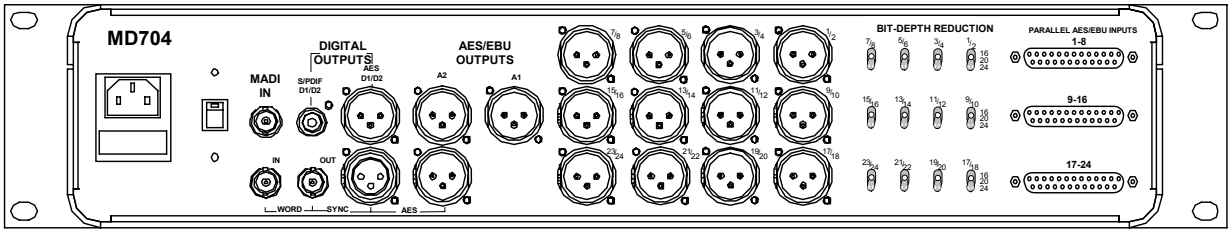


Figure 3-26 MD704 Rear Panel

Input Voltage Selector: This red switch allows the unit to operate in either 100/110/115 VAC or 220/230/240 VAC environments. A fuse must also be changed for 220/230/240 VAC operation. Units are shipped set and fused for 100/110/115 VAC.

Power Connector (IEC) and **Fuse Tray**: The IEC power connector accepts standard IEC power cords. The fuse tray contains both the active and spare fuses.

AES/EBU Digital Outputs (female XLR): 12 AES/EBU stereo outputs.

Parallel AES/EBU Digital Outputs (female DB25): Three 8-channel digital connectors function in parallel with XLR digital outputs and the two outputs should not be used simultaneously. See Figure 3-27 on page 54 for pinout diagram.

Auxiliary Analog Outputs (male XLR): Two balanced analog outputs on XLR connectors. Output level can is set from the front panel.

AES/EBU Digital Outputs (male XLR): Stereo AES/EBU digital outputs on one XLR connector. Functions in parallel with the auxiliary S/PDIF output and the two outputs should not be used simultaneously.

S/PDIF Digital Outputs (RCA): Stereo S/PDIF digital output on one RCA connector. Functions in parallel with the auxiliary AES/EBU output and the two outputs should not be used simultaneously.

AES Sync In (female XLR): Master clock input for the converter when using AES as the Sample Rate Source.

AES Sync Thru (male XLR): Outputs the same signal connected to AES Sync In.

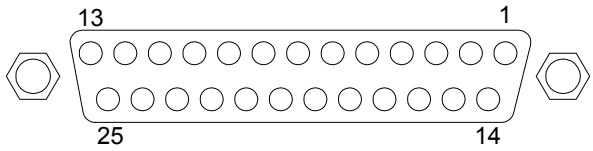
Word In (BNC): Master clock input for the converter when using Word Clock as Sample Rate Source.

Word Out (BNC): Outputs a Word Clock signal synchronized to the Sample Rate Source. In the presence of an external Word clock input, this connector provides a regenerated version of the input signal. Without an external sample rate source, this connector outputs an internally generated clock signal.

MADI In (BNC): Digital audio signal input.

- **1–24:** main digital outputs
- **25–26:** aux analog outputs
- **27–28:** aux digital outputs

Bit-Depth Reduction: Sets the resolution to 16, 20, or 24 bits for the main AES/EBU channels.



Pin#	Connector 1	Connector 2	Connector 3
1	Digital out 7/8+	Digital Out 15/16+	Digital Out 23/24+
2	GND	GND	GND
3	Digital out 5/6-	Digital Out 13/14-	Digital Out 21/22-
4	Digital out 3/4+	Digital Out 11/12+	Digital Out 19/20+
5	GND	GND	GND
6	Digital out 1/2-	Digital Out 9/10-	Digital Out 17/18-
7	N/C	N/C	N/C
8	N/C	N/C	N/C
9	N/C	N/C	N/C
10	N/C	N/C	N/C
11	N/C	N/C	N/C
12	N/C	N/C	N/C
13	N/C	N/C	N/C
14	Digital out 7/8-	Digital Out 15/16-	Digital Out 23/24-
15	Digital out 5/6+	Digital Out 13/14+	Digital Out 21/22+
16	GND	GND	GND
17	Digital out 3/4-	Digital Out 11/12-	Digital Out 19/20-
18	Digital out 1/2+	Digital Out 9/10+	Digital Out 17/18+
19	GND	GND	GND
20	N/C	N/C	N/C
21	N/C	N/C	N/C
22	N/C	N/C	N/C
23	N/C	N/C	N/C
24	N/C	N/C	N/C
25	N/C	N/C	N/C

Figure 3-27 DM704 Parallel AES/EBU Digital Outputs: Female DB-25

FC727/726 Format Converter

> ***NOTE:*** *FC726 is the same as FC727 but does not support Pro Tools.*

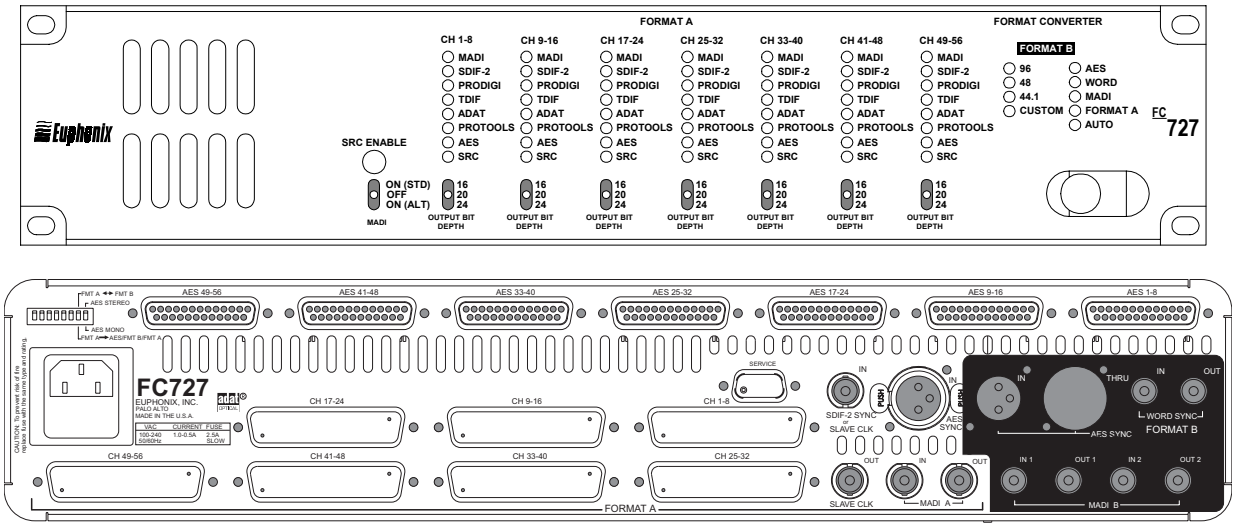


Figure 3-28 FC727/726 Front and Rear Panels

The FC727 Format Converter provides 56 sample-rate selectable, AES/EBU inputs and outputs. It also allows direct connection to the following third-party digital formats: TDIF, ProDigi, SDIF-2, ADAT Optical, and Pro Tools.

Power Connector (IEC): Accepts standard IEC power cord (provided). An autoranging switching supply accepts voltages between 100–240 VAC, 50–60 Hz.

Format A Common Connectors (seven DB-50): Connects to third-party devices. Each connector provides eight bidirectional channels. Appropriate adapters must be used for each format to connect the third-party devices. Specify cable requirements at time of order. See Table 3-7 through Table 3-10 for pinout specifications.

Format A AES Connectors (seven DB-25): Connects to AES devices. Each connector provides eight bidirectional channels (four AES pairs). Specify cable requirements at time of order.

MADI A In 1 / MADI A Out 1 (two BNC): The MADI A In/Out Ports interface with non-Euphonix MADI devices. At 48 kHz, MADI A provides 56 channels of 24-bit audio; at 96 kHz, 28 channels of 24-bit audio channels (cable not provided).

Format A AES Sync In (female XLR): Connect an AES Sync signal to this XLR connector to synchronize the Format A MADI signal. According to the AES specification, to operate correctly the AES sync signal must use the same sample rate as the incoming MADI signal (cable not provided).

SDIF-2 or **Slave Clock In** (BNC): This connector can receive either an SDIF or Slave Clock Sync signal (the FC727 automatically detects the signal type). An SDIF device must send a Word Sync signal to this connector to interface properly. Slave Clock is a sync signal (commonly implemented in Pro Tools systems and referred to as a *super-clock*) that runs at 256 times the sample rate. Pro Tools users may optionally connect the Slave Clock output from another Digidesign audio interface or synchronization unit (i.e., 888-24) to the Slave Clk In connector to synchronize both devices. Cable not provided.

Slave Clock Out (BNC): Pro Tools users may optionally connect the Slave Clk Out to another Digidesign audio interface or synchronization unit (i.e., 888-24) to synchronize both devices. This allows both a Digidesign I/O unit and the FC727 to be connected to the same Pro Tools computer. If Slave Clk In has a valid sync signal, it is passed through to Slave Clk Out. If Slave Clk In does not have a valid sync signal, the lowest numbered bank of eight inputs that is locked and in use is selected as the clock source (cable not provided).

MADI B In 1 / MADI B Out 1 (two BNC): Connect these MADI Ports to the DF64 or optional SH612 Studio Hub (cable provided).

Format B AES Sync In (female XLR): Connect this port to a digital sync reference.

Format B AES Sync Thru (male XLR): This signal is active regardless of selected sync source.

Format B Word In (BNC): Connect this port to a digital sync reference.

Format B Word Out (BNC): This signal is active regardless of selected sync source.

Table 3-6 AES/EBU DB-25 Pinout

Pin	Description
Pin 1	N/C
Pin 2	Channel 1 / 2 In (COLD)
Pin 3	Channel 3 / 4 In (GND)
Pin 4	Channel 3 / 4 In (HOT)
Pin 5	Channel 5 / 6 In (COLD)
Pin 6	Channel 7 / 8 In (GND)
Pin 7	Channel 7 / 8 In (HOT)
Pin 8	Channel 1 / 2 Out (COLD)
Pin 9	Channel 3 / 4 Out (GND)
Pin 10	Channel 3 / 4 Out (HOT)
Pin 11	Channel 5 / 6 Out (COLD)
Pin 12	Channel 7 / 8 Out (GND)
Pin 13	Channel 7 / 8 Out (HOT)
Pin 14	Channel 1 / 2 In (GND)
Pin 15	Channel 1 / 2 In (HOT)
Pin 16	Channel 3/ 4 In (COLD)
Pin 17	Channel 5 / 6 In (GND)
Pin 18	Channel 5 / 6 In (HOT)
Pin 19	Channel 7 / 8 In (COLD)
Pin 20	Channel 1 / 2 Out (GND)
Pin 21	Channel 1 / 2 Out (HOT)
Pin 22	Channel 3 / 4 Out (COLD)
Pin 23	Channel 5 / 6 Out (GND)
Pin 24	Channel 5 / 6 Out (HOT)
Pin 25	Channel 7 / 8 Out (COLD)

NOTE: *In and Out are from the FC727's perspective.*

Table 3-7 Common DB-50 Connector Pinout and Usage With Third-party Devices

Pin #	Common Connector (DB50 Female)	SDIF usage	TDIF usage	ProDigi usage	ADAT usage	ProTools
1	In 1+	In 1+	NC	In 1+	In 1/2	In 1/2+
2	In 1-	In 1-	In 1/2	In 1-	NC	In 1/2-
3	In 2+	In 3+	NC	In 3+	In 3/4	In 3/4+
4	In 2-	In 3-	In 3/4	In 3-	NC	In 3/4-
5	In 3+	In 5+	NC	In 5+	In 5/6	In 5/6+
6	In 3-	In 5-	In 5/6	In 5-	NC	In 5/6-
7	In 4+	In 7+	NC	In 7+	In 7/8	In 7/8+
8	In 4-	In 7-	In 7/8	In 7-	NC	In 7/8-
9	GND	GND	GND	GND	GND	GND
10	In 5+/GP In A	In 2+	NC	In 2+	Error In	ICR_WC+
11	In 5-	In 2-	NC	In 2-	NC	ICR_WC-
12	In 6+/GP In B	In 4+	NC	In 4+	User0 In	ICR_BC+
13	In 6-	In 4-	NC	In 4-	NC	ICR_BC-
14	In 7+/GP In C	In 6+	NC	In 6+	User1 In	ICR_SD+
15	In 7-	In 6-	NC	In 6-	NC	ICR_SD-
16	In 8+/GP In D	In 8+	NC	In 8+	Mstr/Slv IN	ICR_AD+
17	In 8-	In 8-	NC	In 8-	NC	ICR_AD-
18	Cable ID2	0 (tie to pin 23)	0 (tie to pin 23)	0 (tie to pin 23)	1 (NC)	1 (NC)
19	Cable ID1	0 (tie to pin 23)	1 (NC)	1 (NC)	0 (tie to pin 23)	0 (tie to pin 23)
20	Cable ID0	1 (NC)	0 (tie to pin 23)	1 (NC)	0 (tie to pin 23)	1
21	Bit Clk In+	NC	NC	Bit Clk In+	Bit Clk In	Bit Clk In+
22	Bit Clk In-	NC	NC	Bit Clk In-	NC	Bit Clk In-
23	GND	GND	GND	GND	GND	GND
24	Word Clk In+	NC	In LR Clk	Word Clk In+	Word Clk In	Word Clk In+
25	Word Clk In-	NC	NC	Word Clk In-	GND	Word Clk In-
26	Out 1+	Out 1+	NC	Out 1+	Out 1/2	Out 1/2+
27	Out 1-	Out 1-	Out 1/2	Out 1-	NC	Out 1/2-
28	Out 2+	Out 3+	NC	Out 3+	Out 3/4	Out 3/4+
29	Out 2-	Out 3-	Out 3/4	Out 3-	NC	Out 3/4-
30	Out 3+	Out 5+	NC	Out 5+	Out 5/6	Out 5/6+
31	Out 3-	Out 5-	Out 5/6	Out 5-	NC	Out 5/6-
32	Out 4+	Out 7+	NC	Out 7+	Out 7/8	Out 7/8+
33	Out 4-	Out 7-	Out 7/8	Out 7-	NC	Out 7/8-
34	Out 5+/GP Out A	Out 2+	FS0 out	Out 2+	Mute Out	NC
35	Out 5-	Out 2-	NC	Out 2-	NC	NC
36	Out 6+/GP Out B	Out 4+	FS1 out	Out 4+	NC	NC
37	Out 6-	Out 4-	NC	Out 4-	NC	NC
38	Out 7+/GP Out C	Out 6+	Emph Out	Out 6+	NC	NC
39	Out 7-	Out 6-	NC	Out 6-	NC	NC
40	Out 8+/GP Out D	Out 8+	NC	Out 8+	NC	NC
41	Out 8-	Out 8-	NC	Out 8-	NC	NC
42	Bit Clk Out+	NC	NC	Bit Clk Out+	Bit Clk Out	Bit Clk Out+
43	Bit Clk Out-	NC	NC	Bit Clk Out-	GND	Bit Clk Out-
44	GND	GND	GND	GND	GND	GND
45	Word Clk Out+	NC	Out LR Clk	Word Clk Out+	Word Clk Out	NC
46	Word Clk Out-	NC	NC	Word Clk Out-	GND	NC
47	Extra In/GP In E+	NC	NC	NC	DVCO In	NC
48	Extra In/GP In E-	NC	NC	NC	NC	NC
49	NC	NC	NC	NC	Vcc	NC
50	GND	GND	GND	GND	GND	GND

Table 3-8 FC727 TDIF Cable Wiring Specification

Connector	Pin	Connection	Description
J1	1	NC	
J1	2	J2-1	In 1/2
J1	3	NC	
J1	4	J2-2	In 3/4
J1	5	NC	
J1	6	J2-3	In 5/6
J1	7	NC	
J1	8	J2-4	In 7/8
J1	9	J2-7,24,25	GND
J1	10	NC	
J1	11	NC	
J1	12	NC	
J1	13	NC	
J1	14	NC	
J1	15	NC	
J1	16	NC	
J1	17	NC	
J1	18	J1-23	Cable ID
J1	19	NC	Cable ID
J1	20	J1-23	Cable ID
J1	21	NC	
J1	22	NC	
J1	23	J2-17,J1-18,J1-20	GND
J1	24	J2-5	Word Clock In
J1	25	NC	
J1	26	NC	
J1	27	J2-13	Out 1/2
J1	28	NC	
J1	29	J2-12	Out 3/4
J1	30	NC	
J1	31	J2-11	Out 5/6
J1	32	NC	
J1	33	J2-10	Out 7/8
J1	34	J2-8	FS0 Out
J1	35	NC	
J1	36	J2-20	FS1 Out
J1	37	NC	
J1	38	J2-21	Emph Out
J1	39	NC	
J1	40	NC	
J1	41	NC	
J1	42	NC	
J1	43	NC	
J1	44	J2-22,23	GND
J1	45	J2-9	Word Clock Out
J1	46	NC	
J1	47	NC	
J1	48	NC	
J1	49	NC	
J1	50	J2-14,15,16	GND

Notes:
J1 = DB-50 male
J2 = DB-25 male

Twisted pairs:
J2-1/14
J2-2/15
J2-3/16
J2-4/17
J2-5/7
J2-9/22
J2-11/23
J2-12/24
J2-13/25
The rest don't matter

In and Out are from the FC727's perspective.

Table 3-9 FC727 Pro Tools Cable Wiring Specification

Connector	Pin	Connection	Description
J1	1	J2-17	In 1/2+
J1	2	J2-42	In 1/2-
J1	3	J2-16	In 3/4+
J1	4	J2-41	In 3/4-
J1	5	J2-1	In 5/6+
J1	6	J2-26	In 5/6-
J1	7	J2-18	In 7/8+
J1	8	J2-43	In 7/8-
J1	9	J2-2	GND
J1	10	J2-5	ICR_WC+
J1	11	J2-30	ICR_WC-
J1	12	J2-3	ICR_BC+
J1	13	J2-28	ICR_BC-
J1	14	J2-21	ICR_SD+
J1	15	J2-46	ICR_SD-
J1	16	J2-23	ICR_AD+
J1	17	J2-48	ICR_AD-
J1	18	NC	Cable ID
J1	19	J1-23	Cable ID
J1	20	NC	Cable ID
J1	21	J2-19	Bit Clk In+
J1	22	J2-44	Bit Clk In-
J1	23	J1-19,J2-13	GND
J1	24	J2-11	Word Clk In+
J1	25	J2-36	Word Clk In-
J1	26	J2-7	Out 1/2+
J1	27	J2-32	Out 1/2-
J1	28	J2-8	Out 3/4+
J1	29	J2-33	Out 3/4-
J1	30	J2-25	Out 5/6+
J1	31	J2-50	Out 5/6-
J1	32	J2-24	Out 7/8+
J1	33	J2-49	Out 7/8-
J1	34	NC	
J1	35	NC	
J1	36	NC	
J1	37	NC	
J1	38	NC	
J1	39	NC	
J1	40	NC	
J1	41	NC	
J1	42	J2-9	Bit Clk Out+
J1	43	J2-34	Bit Clk Out-
J1	44	J2-38	GND
J1	45	NC	
J1	46	NC	
J1	47	NC	
J1	48	NC	
J1	49	NC	
J1	50	J2-27	GND

Notes:

J1 = DB-50 male

J2 =50-pin high density SCSI-2-style female

Jx-x
Jx-x *denotes twisted pair*

In and Out are from the FC727's perspective.

Table 3-10 FC727 SDIF Cable Wiring Specification

Connector	Pin	Connection	Description
J1	1	J4-2	In 1+
J1	2	J4-1	In 1-
J1	3	J4-6	In 3+
J1	4	J4-5	In 3-
J1	5	J4-10	In 5+
J1	6	J4-9	In 5-
J1	7	J4-14	In 7+
J1	8	J4-13	In 7-
J1	9	NC (GND)	
J1	10	J4-4	In 2+
J1	11	J4-3	In 2-
J1	12	J4-8	In 4+
J1	13	J4-7	In 4-
J1	14	J4-12	In 6+
J1	15	J4-11	In 6-
J1	16	J4-16	In 8+
J1	17	J4-15	In 8-
J1	18	J1-23	Cable ID
J1	19	J1-23	Cable ID
J1	20	NC	Cable ID
J1	21	NC	
J1	22	NC	
J1	23	J1-18,19	GND
J1	24	NC	
J1	25	NC	
J1	26	J5-2	Out 1+
J1	27	J5-1	Out 1-
J1	28	J5-6	Out 3+
J1	29	J5-5	Out 3-
J1	30	J5-10	Out 5+
J1	31	J5-9	Out 5-
J1	32	J5-14	Out 7+
J1	33	J5-13	Out 7-
J1	34	J5-4	Out 2+
J1	35	J5-3	Out 2-
J1	36	J5-8	Out 4+
J1	37	J5-7	Out 4-
J1	38	J5-12	Out 6+
J1	39	J5-11	Out 6-
J1	40	J5-16	Out 8+
J1	41	J5-15	Out 8-
J1	42	NC	
J1	43	NC	
J1	44	NC	
J1	45	NC	
J1	46	NC	
J1	47	NC	
J1	48	NC	
J1	49	NC	
J1	50	NC	

Notes:

J1,J2,J3 = DB-50 male

J4 = DB-50 male

J5 = DB-50 female

Jx-x
Jx-x *denotes twisted pair*

In and Out are from the FC727's perspective.

GP132

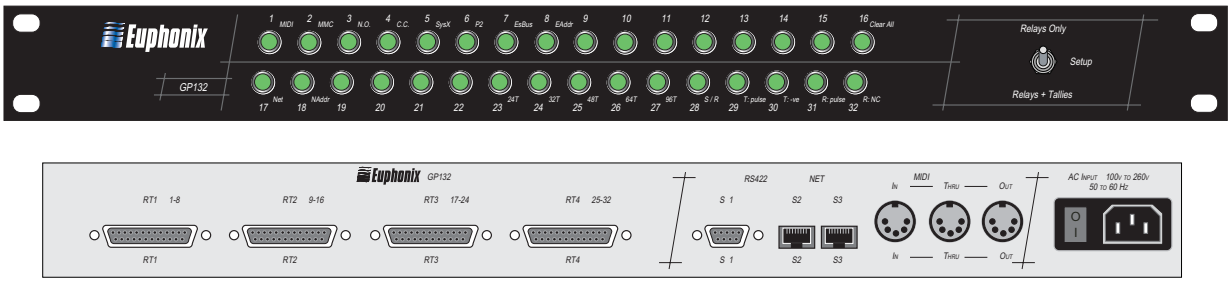


Figure 3-29 GP132 Front and Rear Panels

NOTE: *The maximum length for any MIDI cable is 10 m. Cables over this length may cause data loss (this is the MIDI specification).*

Input and Output Connections

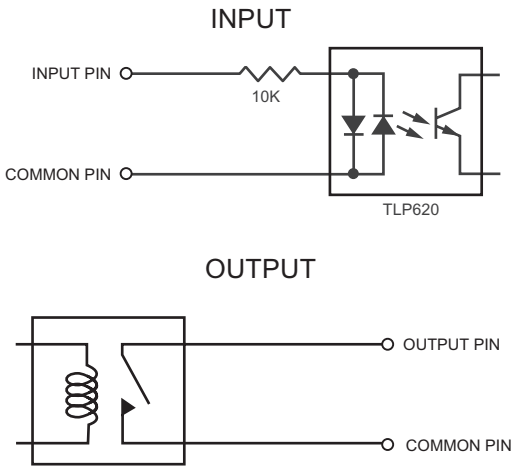


Figure 3-30 GP132 Input and Output Connections

Connector Pinouts (DB-25 RT1–RT4)

Table 3-11 GP132 Outputs

RT1	RT2	RT3	RT4	PIN
1	9	17	25	2
2	10	18	26	16
3	11	19	27	5
4	12	20	28	19
5	13	21	29	8
6	14	22	30	22
7	15	23	31	11
8	16	24	32	25
Common	Common	Common	Common	13

Table 3-12 GP132 Inputs

RT1	RT2	RT3	RT4	PIN
1	9	17	25	1
2	10	18	26	15
3	11	19	27	4
4	12	20	28	18
5	13	21	29	7
6	14	22	30	21
7	15	23	31	10
8	16	24	32	24
Common	Common	Common	Common	3,6,9,12,14, 17,20,23

WARNING: *If power fails on the GP132, none of the relays will function. After restoring power, the GP132 resets ALL relays.*